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Cooperative
**ECONOMIC INSECT
REPORT**

INSECTS NOT KNOWN
To Occur In The United States

Issued by

PLANT PEST CONTROL DIVISION

AGRICULTURAL RESEARCH SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearinghouse and does not assume responsibility for accuracy of the material.

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Survey and Detection Operations
Plant Pest Control Division
Agricultural Research Service
United States Department of Agriculture
Washington 25, D. C.

INSECTS NOT KNOWN TO OCCUR IN THE UNITED STATES 1/
(106-128 of Series)

This series was initiated early in 1957 as an aid to strengthening the detection program against foreign insect pests not known to be established in this country. The statements have been released individually in the Cooperative Economic Insect Report, but due to requests for complete sets of the series, the separates published during a year have been assembled under one cover at the close of that year. This is the fourth such compilation. The separates will continue to appear periodically in the Report. Preparation of this material has been made possible through the generous cooperation of Plant Quarantine and Entomology Research Divisions, ARS, and the U. S. National Museum. Indexes of the foreign insect species included in CEIR volumes 7, 8, 9 and 10 can be found on the last four pages of this publication.

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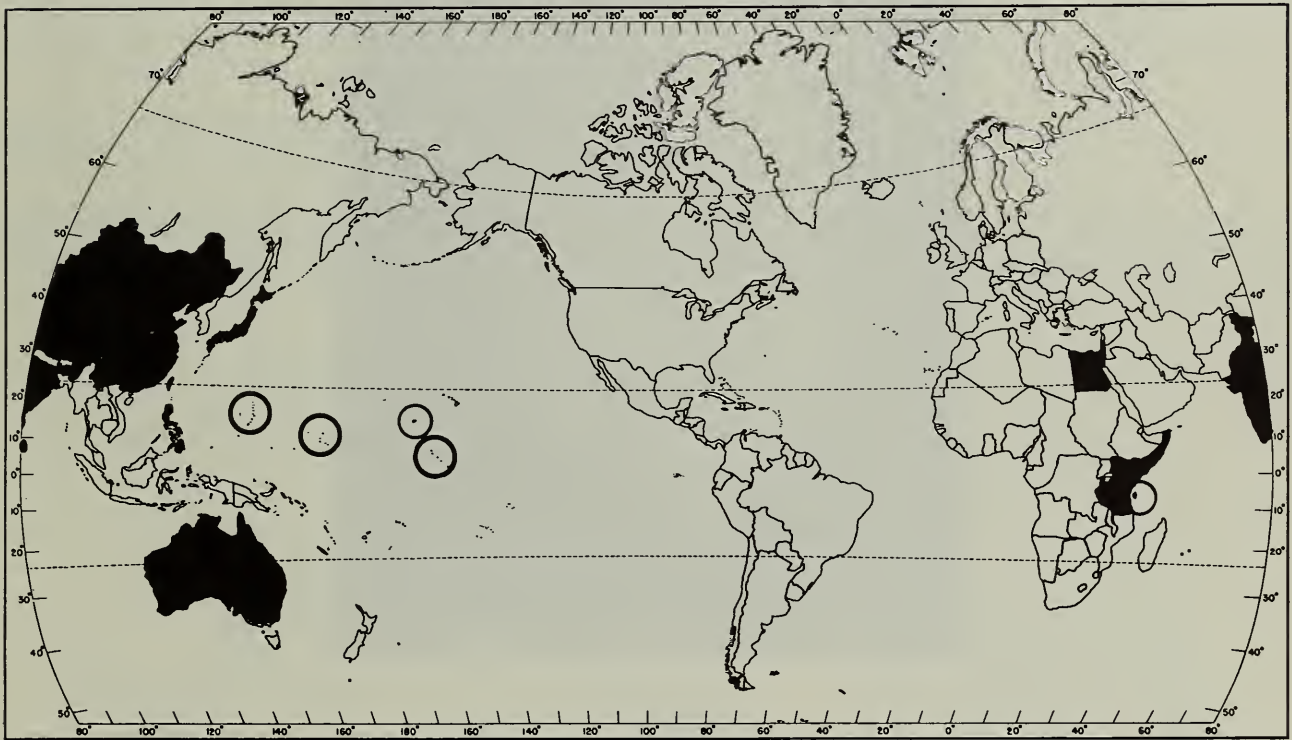
INSECTS NOT KNOWN TO OCCUR IN THE UNITED STATES

EGYPTIAN FLUTED SCALE (Icerya aegyptiaca (Dougl.))

Economic Importance: This margarodid scale was described in 1890 from specimens causing great damage to shade trees in Alexandria, Egypt. The pest occurs in many parts of Micronesia and thrives on many plants. Breadfruit is one of the favored hosts in that area. The insect is common, and sometimes abundant, in Formosa. Avocado and citrus are attacked in some areas, while in others it is not regarded as important on these hosts. Coccinellids in the genus Rodolia, particularly R. premila, are effective in controlling the pest. I. aegyptiaca has been intercepted occasionally at U. S. ports of entry.

Distribution: Australia, Ceylon, China, Egypt, Formosa, India, Israel, Japan, Kenya, Micronesia, Philippines, Somaliland, Tanganyika, Tahiti, Wake Island, Zanzibar.

Hosts: Recorded from over 100 hosts. More important species include citrus, coffee, croton, palm, fig, castorbean, rose, tea, mulberry, guava.



General Distribution of Icerya aegyptiaca

Life History and Habits: A detailed life history of I. aegyptiaca is apparently not available. Observations in Egypt indicate that the females deposit from 150 to 200 eggs. Young nymphs are very active, becoming less active as they mature. This species is capable of building up to large populations which cause considerable injury to host plants. There appears to be several generations a year.

(Margarodidae, Hemiptera)

Description: ADULT female orange-red or brick-red, broad oval, slightly convex above. Dorsum usually covered with white waxy substance which is easily rubbed off. Margin has series of stout waxy filaments curved at tip, very brittle and easily knocked off. Posterior filaments conceal ovisac. The species characterized by the presence of a complete fringe of stout, irregularly sinuate, tapering white processes of powdery wax which gives insect a starlike or fluted appearance. Denuded body of insect 5-7 mm. long by 3-4 mm. broad. Body cuticle covered with large number of hairs of various sizes, those in the marginal region of the abdomen larger in size and forming small groups. A few long setae also in the anal region. (A detailed technical description of this species will be found in a paper on oriental iceryine scale insects by Rao. 1/



Adult female of Icerya aegyptiaca

1/ Rao, V. P. 1950. Indian Jour. Ent. 12(1):39-66. Figure (except map) also from this publication.

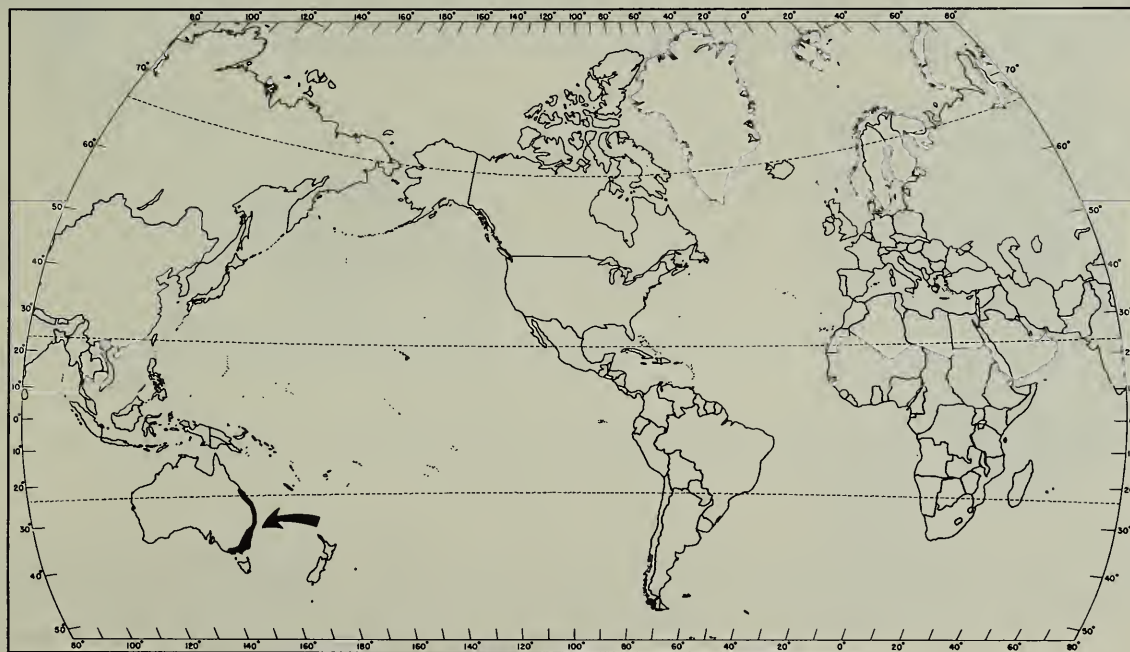
INSECTS NOT KNOWN TO OCCUR IN THE UNITED STATES

PRUINOSE SCARAB (Sericesthis pruinosa Dalman)

Economic Importance: This scarab is a pest of turf in the coastal districts of eastern Australia. The species is abundant in permanent pastures of central and southern coastal districts of New South Wales, and in recent years has become a pest in irrigated lawns and turf in the tablelands of New South Wales, particularly Canberra where biological and ecological studies have been made. This species was first studied by W. W. Froggatt in 1919 at Leura, New South Wales, where it caused severe damage to golf links fairways in 1918-1919. Damage to lawns, golf links and miscellaneous crops has been reported in subsequent years. The botanical composition of the turf, texture and moisture relations of the soil and the presence of shrubs or trees appear to be the most important factors influencing the susceptibility of the turf to infestation. In lawns consisting of both grasses and clovers, larvae are most plentiful in areas where the grasses predominate. Also, the lighter the soil the more prone the turf appears to infestation, and damage is more prevalent in comparatively moist areas of the sod. In addition, dense larval populations cause far less damage to vigorous turf than to weak, shallow-rooted turf. It has been found in Canberra, that certain eucalyptus, particularly Eucalyptus rubida, E. viminalis, the leaves of which are eaten by the adults, appear to be associated with spread of the species in the city. Larvae have not been found in turf unless such trees were growing in the vicinity.

Hosts: Adults feed on trees and shrubs (see above). Larvae feed on roots of turf plants, especially grasses.

Distribution: The species is endemic to the coastal plain of eastern Australia and to the eastern slopes of the Great Dividing Range. It is distributed southwards from Bowen, Queensland, along the whole of New South Wales coast, across southern Victoria, and as far west as the southeastern district of South Australia.



General Distribution of Sericesthis pruinosa

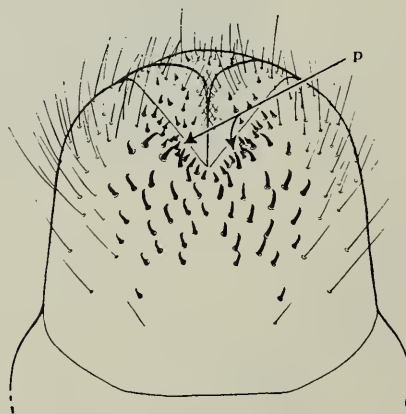
(Scarabaeidae, Coleoptera)

Life History and Habits: Pruinose scarab has a one-year life cycle. The adults fly and oviposit during the summer. There are 3 larval instars; of these, the first two are short and the final instar is commonly entered in early autumn. The latter is the overwintering state. Towards the end of the winter an immobile prepupal stage occurs, followed by pupation in the spring or early summer. Flights of adults begin at dusk and continue for one-half to one hour. The flight season varies according to the area; they probably occur in late October or early November in southern Queensland, in late November and early December at Leura in the Blue Mountains of New South Wales and from early to mid-January at Canberra. The adults feed on leaves of trees or shrubs at night, spending daylight hours under fallen bark or leaf litter. Gravid females burrow among or just below roots of turf and lay 20-40 eggs. The third-instar larvae feed on roots of grasses in March or April, completely severing the roots from the plants at times. Infestations are usually detected at this time. The turf dies off in irregular patches within a few days. Severely infested turf has a pronounced sponginess when walked on and may be picked up and rolled back carpetwise to expose a resting stage. They pupate in cells about an inch or so below the feeding level. The newly emerged adults remain in their pupal cells until shortly before emergence flight.

Description: ADULT - Head and pronotum reddish-brown, with purplish-green iridescence, particularly on the pronotum. Elytra brownish-yellow; between the rows of punctures there are four broad smooth intervals. The surface has characteristic dull sheen, or bloom from which the insect takes its trivial name. LARVA - Certain characters of the raster (shown below) and antennae distinguish the species from several closely related species. The raster bears palidia, consisting of two rows of specialized setae (pali) arranged in the form of a V having a basal angle of approximately 80 degrees. Palidia of this form are common to many species of Sericesthis and Anodontonyx (a genus closely related to, if not synonymous with, Sericesthis), but in most species the pali are so arranged that their sockets lie on a straight line; in S. pruinosa, as can be seen in the figure below, they are appreciably staggered. In this group of pasture scarabs, the penultimate segment of the larval antenna commonly bears a conspicuous anteroventral projection; in S. pruinosa, this is reduced to a short, blunt prominence. Using these characters, both second and third-instar larvae can be recognized. (Prepared in Survey and Detection Operations in cooperation with other ARS agencies and the U. S. National Museum). CEIR 10(21):5-20-60.



A



B

Figures of Sericesthis pruinosa: A - Adult. B - Raster of third-instar larva.

Major references: Carne, P. B. and Chinnick, L. J. 1957. Austral. Jour. Agr. Res. 8(6):604-616. Figure of raster. Adult - USDA photo.

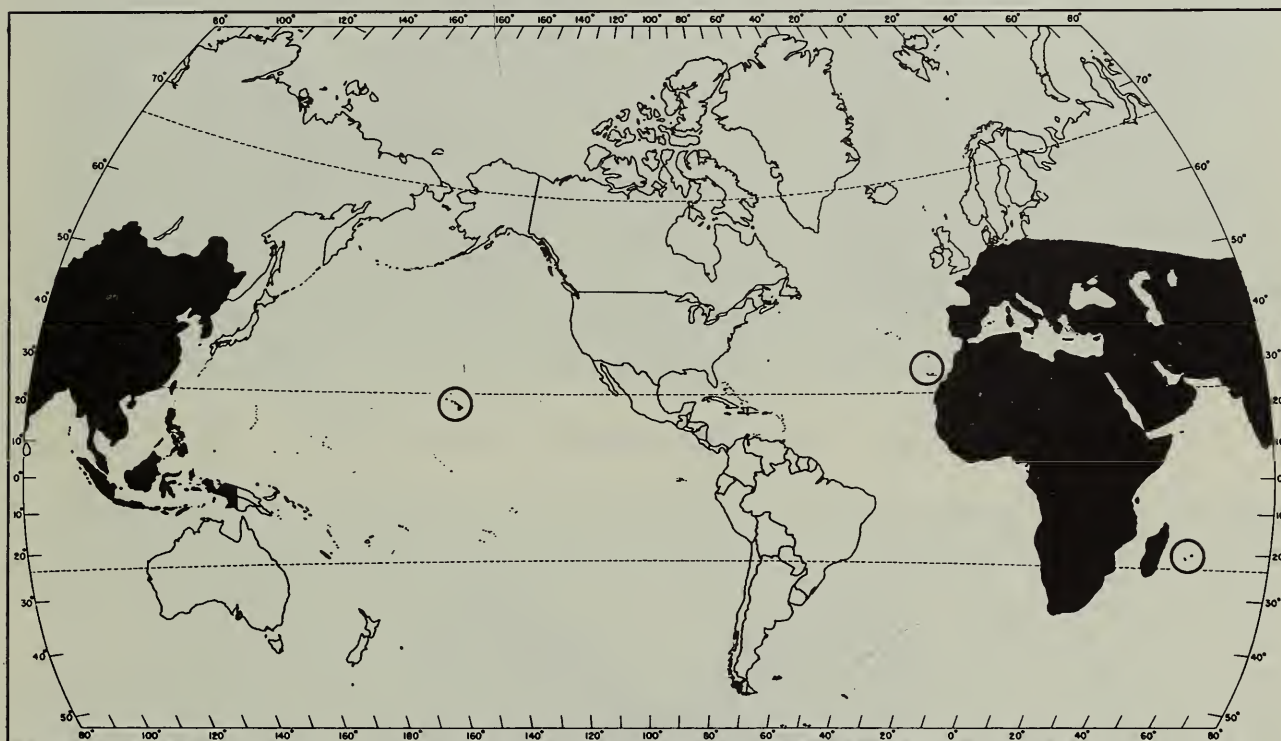
INSECTS NOT KNOWN TO OCCUR IN THE UNITED STATES*

BEAN BUTTERFLY (Lampides boeticus: (L.))

Economic Importance: This lycaenid is injurious to legumes in many areas of the world, particularly in the Mediterranean Region and North Africa. It occurs commonly on beans in Japan and legumes in Hawaii. The insect is generally considered to be a minor pest in many parts of its range, only occasionally building up to serious proportions in local areas. Larvae have been intercepted on numerous occasions at U. S. ports of entry.

Distribution: Most of Africa, Central and Southern Europe, Western and Central Asia and Pacific Islands, including Hawaii. Also Mauritius, Canary Islands, Madagascar.

Hosts: Legumes including beans, soybeans, peas, cowpeas, vetch, alfalfa, crotalaria and possibly other hosts.



General Distribution of Lampides boeticus (L.)

Life History and Habits: The biology of L. boeticus is not too well known. Eggs are deposited on flowers, pods and buds of the plant. The larvae feed on the flowers, seeds and occasionally in the stalks. In France, the larvae are common in peas from June to August. They pupate on plants or in debris and adults emerge in August and September. There appears to be only one generation a year in France but two or more are reported from other areas.

(Lycaenidae, Lepidoptera)

* Excluding Hawaii

Description: ADULT wingspread 28 to 30 mm. Wings are bright blue with velvety reflections. In the female, forewings are bordered with black on the external margin while in the male, they are distinctly smoky around the margins. The hindwings are the same color and are provided at the posterior extremity with a small, thin black tail. From the lower side, they show two black points in the female and a series of large black points in the male. In the latter, the hindwings are deeply smoky colored at the base with a reddish-orange reflection. The underside is more or less dark, peppered with gray and white, and spotted with two black, orange-bordered points situated near the base of the hindwing. Full-grown LARVA is about 10 mm. long; thick; variable colored, deep green or brown-red with a dark dorsal line and a series of clear oblique, lateral lines on each segment. The spiracles are circled in white. (Prepared in Survey and Detection Operations in cooperation with other ARS agencies). CEIR 10(30): 7-22-60.



Female and Male of Lampides boeticus (Dorsal View)



Ventral View of L. boeticus

INSECTS NOT KNOWN TO OCCUR IN THE UNITED STATES

CORN GROUND BEETLE (Zabrus tenebrioides (Goeze))

Economic Importance: This carabid causes serious losses to small grains in several areas of Europe. During 1931-32, larvae infested more than 40 districts in the Ukraine (USSR) and completely destroyed or severely injured crops over areas of about 18 and 27 square miles. More recently (1947-52), in Vojvodina, Serbia and eastern Croatia, Yugoslavia, 18,251 acres of wheat, barley and rye were destroyed. Up to 109 larvae per square foot were recorded in samples taken in the infested areas. Upon emergence in the spring, adults cause additional damage by feeding on the small grains before the grains ripen.

Distribution: Recorded in Spain, France, England, Belgium, Holland, Denmark, Germany, Austria, Czechoslovakia, Poland, Hungary, Rumania, USSR, Italy, Yugoslavia, Bulgaria, Greece and Turkey.

Hosts: Small grains (wheat, barley, rye, oats) appear to be the most important cultivated crops. Has also been recorded on corn and beets, however.



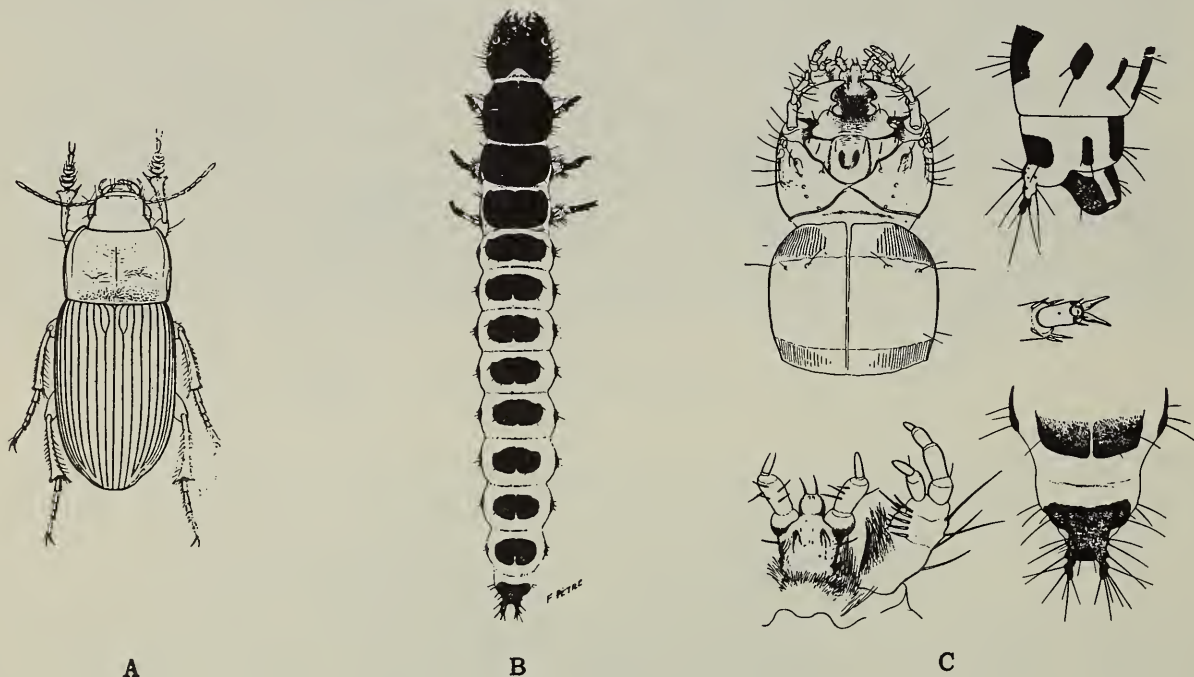
General Distribution of Zabrus tenebrioides

Life History and Habits: Life history and habits as recorded in Yugoslavia are as follows: Oviposition begins as early as August, the date depending on soil humidity. Eggs are laid singly in small chambers in the upper 7 inches of soil, averaging from 40-80 per female. The oviposition period is extended because eggs do not all mature at the same time. Larvae hatch in 8-17 days, or longer at temperatures below 60.8° F. Larvae may survive for 30-50 days without food. Larval feeding and development begin in late September and last for about 86 days in the laboratory, but up to 7 and one-half months in the field. Most larvae overwinter in first or second instar, ceasing to feed but continuing to molt. Pupation takes place in oval chambers in the soil in April or May and lasts for 12-20 days, depending on the temperature. On emergence, adults come to the surface and feed on wheat grains in "milky" stage until mid-June, when feeding ceases and they disperse to other grain fields. Maturation feeding then takes place, followed by an aestivation period lasting 1½-3 months. Pairing occurs during August and September. Although adults were reported to be nocturnal feeders in Yugoslavia, records from other countries indicate that they may feed on young

(Carabidae, Coleoptera)

plants during daylight hours. Spring-sown crops are also preferable to fall-sown crops. Infestations, though severe, are limited since the adults fly very little, if any.

Description: ADULT (from Fowler) - Convex, deep black, occasionally with a feeble metallic tinge; antennae and palpi ferruginous; thorax transverse, slightly narrowed in front, sides almost straight behind, posterior angles blunt right angles, base rather broader than extreme base of elytra, coarsely and strongly punctured in front and behind, disc much wrinkled; elytra broad, parallel, with strong punctured striae; femora black, tibiae and tarsi reddish. Length 14-16 mm. Mature LARVA reaches 30 mm., is narrow, elongated, flattened, distinctly segmented, yellowish-white color, except the head and the 3 segments of the thorax which are more leathery and chestnut color; abdomen is tapered to the extremity and ends in two appendages; each of its segments bears on its dorsum a reddish transverse leathery plate. Larva has stout mandibles and 3 pairs of well-developed legs terminated by a hard brownish hook. The small-size of the urogomphi on the ninth abdominal segment is characteristic of the genus Zabrus. (see illustration). These organs are almost one-half as long as the segment. They are chitinized and laterally bidentate. (Prepared in Survey and Detection Operations in cooperation with other ARS agencies). CEIR 10(10):3-4-60.



Figures of Zabrus tenebrioides: A - Adults. B - Larva. C - Details of Larval Head and Ninth Abdominal Segment.

Major references: Bjegovic, P. 1957. Inst. Plant Prot. Mem. No. 5, 104 pp., Belgrade. Fowler, W. F. 1887. The Coleoptera of the British Islands Vol. 1, pp. 58-59. Beffa, G. D. 1949. Gli Insetti Dannosi all'Agricoltura e i Moderni Metodi e Mezzi di Lotta. 978 pp., Milan. (pp. 493-495).

Figures (except map) and additional reference: Balachowsky, A. and Mesnil, L. 1935. Les Insectes Nuisibles aux Plantes Cultivees. Vol. 1, 1137 pp., Paris.

INSECTS NOT KNOWN TO OCCUR IN THE UNITED STATES

LUCERNE CATERPILLAR (Colias lesbia F.)

Economic Importance: Lucerne caterpillar is the most important pest of alfalfa in Argentina, where it is reported to destroy about a quarter of the crop annually. Severe damage to this crop also occurs in Chile and Uruguay.

Distribution: C. lesbia lesbia occurs only in Argentina. Other subspecies have been recorded in southern Brazil, Uruguay, Chile, Peru and Ecuador.

Hosts: Alfalfa. Also reported as occurring on sugar beet.



General Distribution of Colias lesbia and Subspecies

Life History and Habits: In Argentina, C. lesbia has three generations a year in the southern area but development is continuous in the warmer regions. Under favorable conditions, egg through pupal stages last from 19 to 31 days. The butterflies migrate long distances into regions where they cannot survive the winter. Each female deposits from 200 to 500 eggs. The eggs are laid on alfalfa plants. On hatching, the young larvae begin feeding avidly on the foliage and, when populations are abundant, great destruction occurs. The green coloring of the larvae blends with the foliage, making detection difficult. Pupation occurs on the host plants. The adults fly low with rapid movements. They are most active in the heat of the day.

(Pieridae, Lepidoptera)

Description: ADULT wing expanse 45-52 mm., color generally white, yellowish and spotted. Male forewing yellow orange, specimens also with violet reflections. There is a sepia tone, broader in the apices of the forewing but thin in the hindwings. Under surfaces, with exception of reddish middle of forewing, vivid yellow with usual Colias markings. Ground color of upper surface in females very variable: orange-yellow, yellow, yellowish or white with gray dusting also occur. Numerous subspecies, aberrations and forms have been described. EGG elliptical, 1.1 mm., striated. Fastened vertically to foliage of host. LARVA of same coloring as alfalfa foliage, 15-20 mm. in length, with white line on the side. (Prepared in Survey and Detection Operations in cooperation with other ARS agencies and the U. S. National Museum). CEIR 10(2):1-8-60.



Female

Male

Adults of Colias lesbia

USDA Photograph

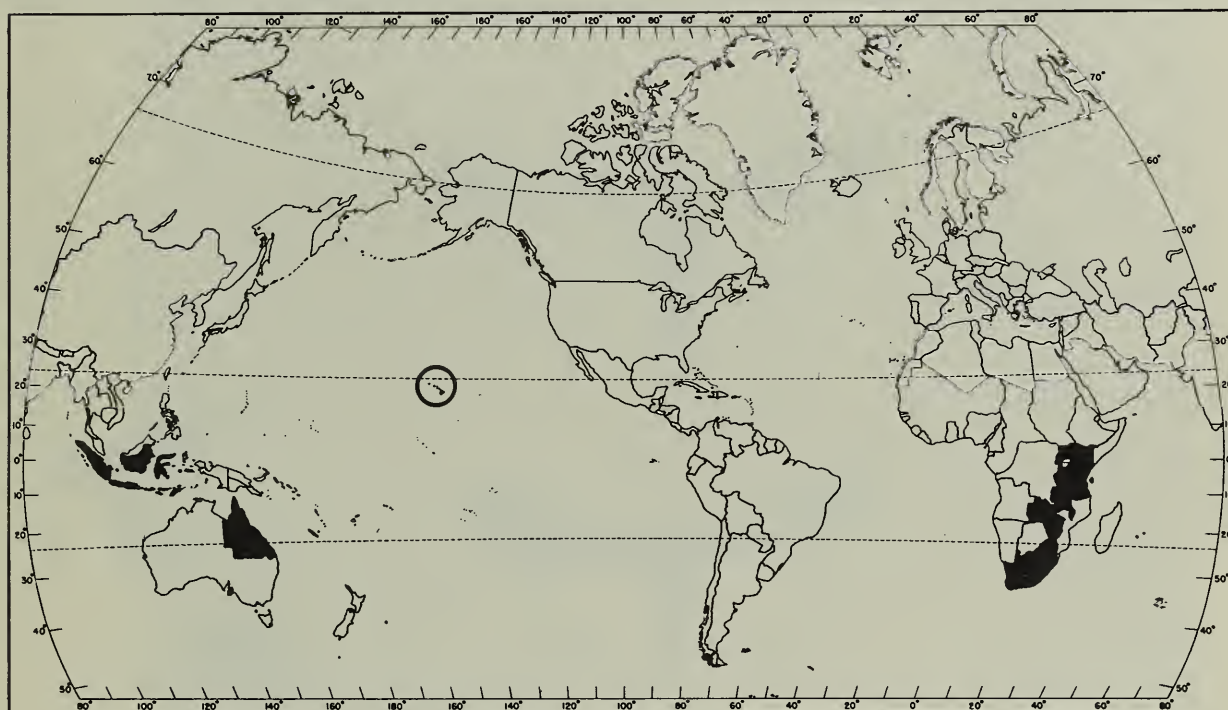
INSECTS NOT KNOWN TO OCCUR IN THE UNITED STATES¹

NUTGRASS ARMYWORM (Spodoptera exempta (Walker))

Economic Importance: This noctuid is one of the most important pests of cereals and other grasses in Africa. Extensive damage has occurred periodically. Outbreaks take place at approximately five-year intervals in Southern Rhodesia and sometimes cause severe injury to corn. The species has caused damage in Hawaii for many years where it is of concern annually in sugarcane plantations. Damaging infestations have also been reported in sugarcane, corn and forage grasses in Queensland, Australia.

Hosts: Corn, sugarcane, small grains and other grasses preferred. Also reported on many other plants including cotton, tobacco and potato.

Distribution: Hawaii, Australia (Queensland), Africa (Federation of Rhodesia and Nyasaland, Kenya, South Africa, Tanganyika, Uganda), Indonesia.



General Distribution of Spodoptera exempta

Life History and Habits: The moths are nocturnal. Eggs are deposited in masses on food plants. Hatching occurs within a week in Southern Rhodesia. Larvae begin feeding voraciously and are full grown in about 3 weeks. Pupation occurs in the soil and moths emerge within 14 days. Under experimental conditions, the life cycle from egg to adult requires about 40 days. Outbreaks rarely last more than 10 days after the larvae are noted. Optimum conditions for an outbreak appear to be high temperature during the oviposition period and an abundance of succulent grasses for the young larvae.

(Noctuidae, Lepidoptera)

1 - Excluding Hawaii

Description: ADULT wing expanse about 30 mm. Color variable, some specimens darker than others. Brownish with white underwings. Very similar to related species in appearance. LARVA - Length 25-30 mm. Dark colored, dorsum dark green with a lighter narrow median line. This median line consists of three thin light lines. Two thin light lines border the dark dorsal area. A narrow dark stripe runs along the region of the spiracles, which are dark brown or black. Ventral surface and legs light yellowish-green. Head uniformly blackish or reticulate; edge of eyes and lateral margins of front whitish. (Prepared in Survey and Detection Operations in cooperation with other ARS agencies).
CEIR 10(47) 11-18-60



Male (above) and Female (below) of Spodoptera exempta

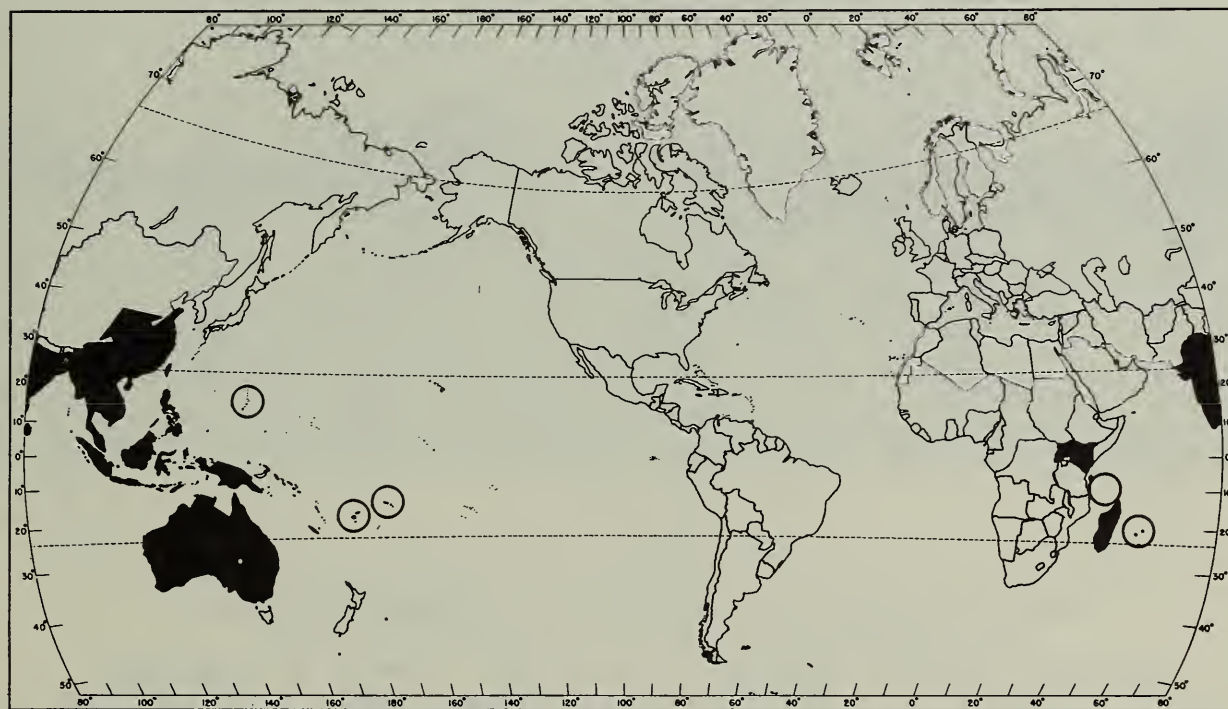
INSECTS NOT KNOWN TO OCCUR IN THE UNITED STATES

PADDY CUTWORM (Spodoptera mauritia (Boisd.))

Economic Importance: This noctuid is known as a pest of graminaceous crops in several areas, particularly in the Australian, Indian, and Pacific regions. Damaging outbreaks build up periodically on rice in Fiji Islands, Indochina, Guam, Indonesia, India and the Philippines. Damage to sugarcane in Queensland, Australia, and corn in the Philippines has been reported. A subspecies, S. mauritia acronyctoides, was recorded in 1958 in Hawaii; and the pest was observed damaging Bermuda grass in 1959.

Distribution: India, Ceylon, Indochina, China, Indonesia, Formosa, Madagascar, Mauritius, Comoro Islands, Australia, New Guinea, Malaya, Guam, Fiji, Samoa, Philippines and other Pacific Islands. In Africa, one moth has been taken in Tanganyika; and the pest is recorded in Uganda and Kenya.

Hosts: Principally a pest of grasses including rice, corn, sugarcane, wheat and barley. Also recorded from other plants including tobacco, tomato and cabbage.



Distribution of Spodoptera mauritia

Life History and Habits: In India, eggs are deposited, usually on the undersurfaces of the leaves, in batches. These are covered with buff-colored hairs from the body of the moth. The larvae feed at night, hiding during the day under debris or other shelter. Pupation occurs in the soil, and moths emerge in about 10 days.

(Noctuidae, Lepidoptera)

Description: Specimens of Spodoptera mauritia resemble specimens of our North American Laphygma frugiperda, except that the reniform spot of the forewing of maurititia is dark brown and the veins of the hindwings are usually partly covered with fuscous scales. A detailed description of S. mauritia is included in Hampson, G. F. 1909 Catalogue of the Noctuidae Brit. Mus. pp. 256-257. (Prepared in Survey and Detection Operations in cooperation with other ARS agencies).
CEIR 10(38): 9-16-60



USDA Photograph

Adults of Spodoptera mauritia and Laphygma frugiperda

(Left Top - Male S. mauritia; Left Bottom - Female S. mauritia;
Right Top - Male L. frugiperda; Right Bottom - Female L. frugiperda)

INSECTS NOT KNOWN TO OCCUR IN THE UNITED STATES

ALMOND BUG (Monosteira unicastata Muls. & Rey)

Economic Importance: This tingid causes damage to apple and pear in North Africa. It is also injurious to almonds, apricots, cherries, pears and plums in Italy and Spain. Feeding causes yellow spotting of leaves and in heavy infestations the foliage becomes coated with excreta. Severe attacks lead to defoliation, heavy losses of crop, and abnormal second growth. Monosteira unicastata has been intercepted occasionally at U. S. ports of entry.

Distribution: Recorded in Albania, Czechoslovakia, Cyprus, France, Greece, Hungary, Italy (including Sicily), Portugal, Spain, Romania, Turkey, United Arab Republic (Syria), U.S.S.R. (Caucasus, Turkestan), Yugoslavia and North Africa.



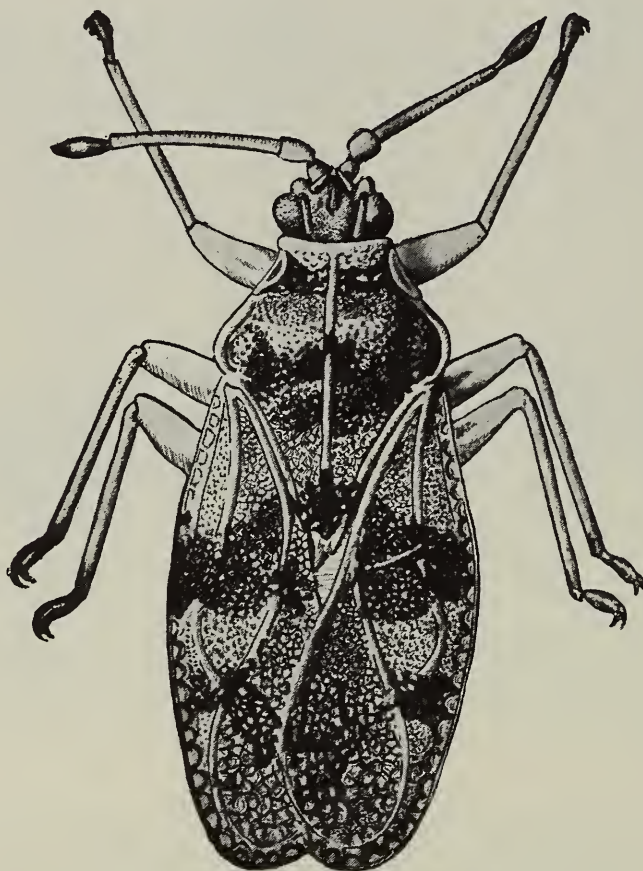
General Distribution of Monosteira unicastata

Hosts: Almond, apricot, cherry, pear, apple, plum, peach, hawthorn, willow and poplar.

Life History and Habits: Adults overwinter in cracks in tree trunks or in debris in the soil. Eggs are inserted into the leaf tissue along the veins on the underside of the leaves. The eggs hatch in 13-15 days. The nymphs undergo 5 molts and complete development in 25-30 days. There are as many as 3 or 4 generations annually with considerable overlapping late in the season so that all stages may be found at one time. Injury is reported to be more serious in late summer.

(Tingidae, Hemiptera)

Description: ADULT 2-2.5 mm. head to tip of wings which extend pass tip of abdomen. General form oval. Color brownish-yellow marked transversally with dull-brown and black spots. (see illustration). Lower part of thorax black; underside of abdomen, brownish-red. Uppersurface of pronotum coarsely punctate. Head small, reddish eyes prominent, brown-red. Head has 3 frontal spinose protuberances arranged in a triangle. Occiput has two diverging spines which are longer than those on the fore part of the head and directed forward. Antenna has 4 segments: the two basilar are short and swollen, the third slender and several times longer than wide, the last fusiform and sharp-pointed. Legs pale-yellow with extremities of tibiae and tarsi darker. Male easily distinguished from female by presence of intercrossing parameres at extremity of abdomen. (Prepared in Survey and Detection Operations in cooperation with other ARS agencies). CEIR 10(12):3-18-60.



Adult of Monosteira unicostata

Major reference and figure (except map) from: Bremond, P. 1938. Rev. de Path. Veget. et D'Ent. Agr. 25(4):294-307.

INSECTS NOT KNOWN TO OCCUR IN THE UNITED STATES¹

BLACK PARLATORIA SCALE (Parlatoria zizyphus (Lucas))

Economic Importance: This scale insect has been reported as one of the major pests of citrus in southern Europe and China. Heavy populations have also been reported from Thailand, India, Burma, Philippine Islands and Malaya. Although this species is not prolific, it is regarded as a serious pest because of its resistance to insecticides, being one of the most difficult of all scale insects to control. Parlatoria zizyphus was reported from Mississippi in 1937; however, it is believed that this record represented an interception and not an established infestation as no additional reports have been made. This species is frequently intercepted at U. S. ports of entry.

Distribution: Southern Europe, U.S.S.R. (Caucasus, Asiatic), Morocco, Union of South Africa, Iran, India, Burma, Thailand, Malaya, China, Japan, Formosa, Libya, Philippine Islands, Okinawa, Micronesia, northern Australia, Hawaii, British Guiana, West Indies and Argentina.

Hosts: Citrus. Also reported in a few cases from Ligustrum, Carissa, and Severinia buxifolia.



General Distribution of Parlatoria zizyphus

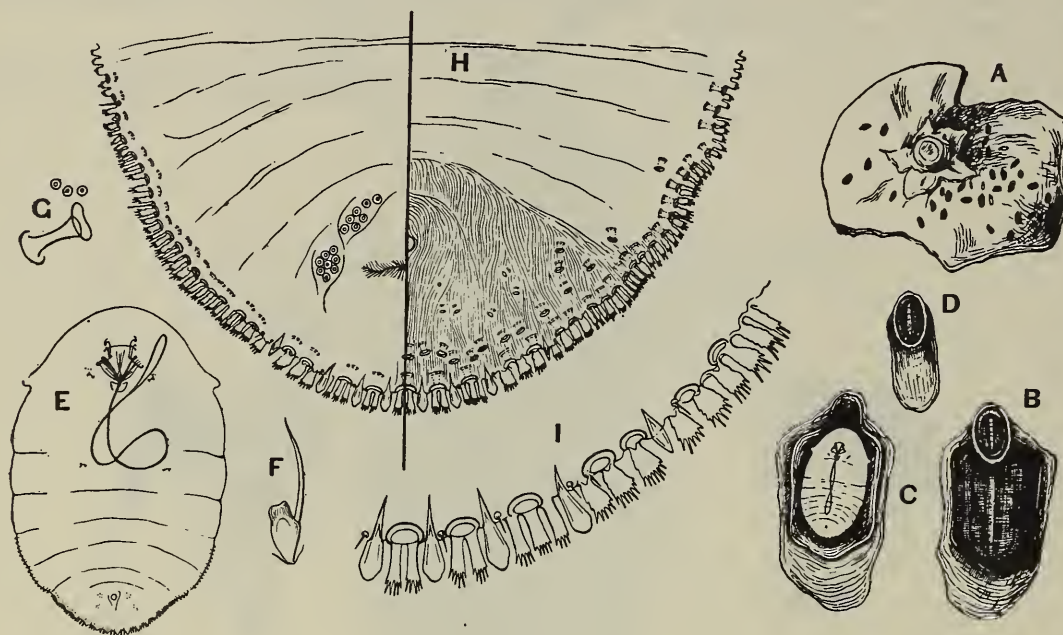
Life History and Habits: In spite of its name, this species does not occur on jujube. It occurs almost entirely on citrus. The insects become established on leaves and fruit and may form a black crust when abundant. In such cases, the leaves turn yellow and defoliation occurs. Very heavy infestations cause stunting of the fruit but in light attacks the growth of the fruit is not noticeably distorted. All stages of the insect can be found in some areas throughout the year. There are about 4 or 5 generations annually. Females lay from 10-20 oval violet eggs, which are arranged in the folds of a ventral covering in two parallel rows. The eggs do not hatch for a long period.

(Diaspididae, Hemiptera)

¹Except the State of Hawaii

Description: Scale of female rectangular, flat, composed almost entirely of the opaque black, molted skin of the second stage and with a narrow white or brownish supplementary secretion, which at the posterior extremity is sometimes extended. The dorsum has two or three longitudinal ridges. Length about 1.6 mm. Scale of male elongate, whitish or brownish in color with larval exuvia black. Less than 1 mm. Key to this species according to Morrison is as follows:

"No duct tubercles on anterior portion of body, opposite anterior spiracles, or before these; eyespot large and conspicuous; submarginal dorsal tubular ducts very few, probably not exceeding 15 on each side of body; no dorsal intermediate macroducts; microducts, if present in this area, very few and inconspicuous. With duct tubercles on body margin between anterior and posterior spiracles, opposite posterior spiracles, and on first abdominal segment, but these small and inconspicuous; eyespot large but set at apex of a conspicuous globular to somewhat elongated projection of body margin; fully developed pygidial lobes distinctly notched laterally; fourth lobe represented by a stout and conspicuous sclerotized spur." (Prepared in Survey and Detection Operations in cooperation with other ARS agencies). CEIR 10(8):2-19-60.



Figures of Parlatoria zizyphus: A - Scales with host. B - Female (dorsal view). C - Female (ventral view). D - Male (dorsal view). E - Female (ventral view). F - Antenna of female. G - Anterior parastigmatic glands of female. H - Pygidium of female. I - Margin of female.

Major references:

1. Morrison, H. 1939. U. S. Dept. Agr. Misc. Pub. 344:26-29.
2. Ebeling, W. 1959. Tropical Fruit Pests. 436 pp., Los Angeles. (pp. 234-235).

Figures (except map) from Kuwana, I. 1925. The Diaspine Coccidae of Japan, I. Dept. of Finance, Japan, Tech. Bul. 1, 18 pp.

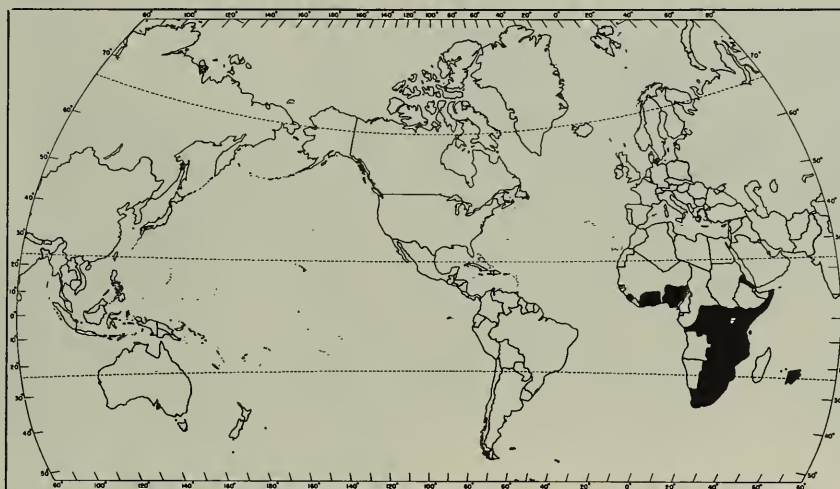
INSECTS NOT KNOWN TO OCCUR IN THE UNITED STATES

FALSE CODLING MOTH* (Cryptophlebia leucotreta Meyr.)

Economic Importance: This olethreutid is widely distributed in Africa south of the twentieth parallel where it is a pest of fruits of many plants, especially citrus and cotton. It has been reported as one of the principal plant pests of Uganda and the Rhodesias. Infestations in neglected Rhodesia citrus orchards may run as high as 70 percent, but observations in orchards of eastern Transvaal over a period of several years showed infestations of about 5 percent in navel oranges and 2 percent in Valencias. In Eritrea, it causes almost as much fruit-fall as the Mediterranean fruit fly. At times the insect is an important pest of cotton in Uganda and southern Belgian Congo, causing damage to partly-grown bolls. Living larvae of this insect have been intercepted at U. S. ports of entry on several occasions in grapefruit, oranges and tangerines.

Distribution: Africa (South Africa, the Rhodesias, Kenya, Tanganyika, Uganda, Zanzibar, Nigeria, Sierra Leone, Italian Somaliland, Nyasaland, Ethiopia (Eritrea), Ivory Coast, Belgian Congo, Ghana, Togoland, Mozambique and Mauritius Island).

Hosts: Attacks fruits of many plants including sorghum, orange, grapefruit, tangerine, walnut, cotton, okra, corn, olive, avocado, guava, plum, peach, apricot, castorbean, oak and litchee.

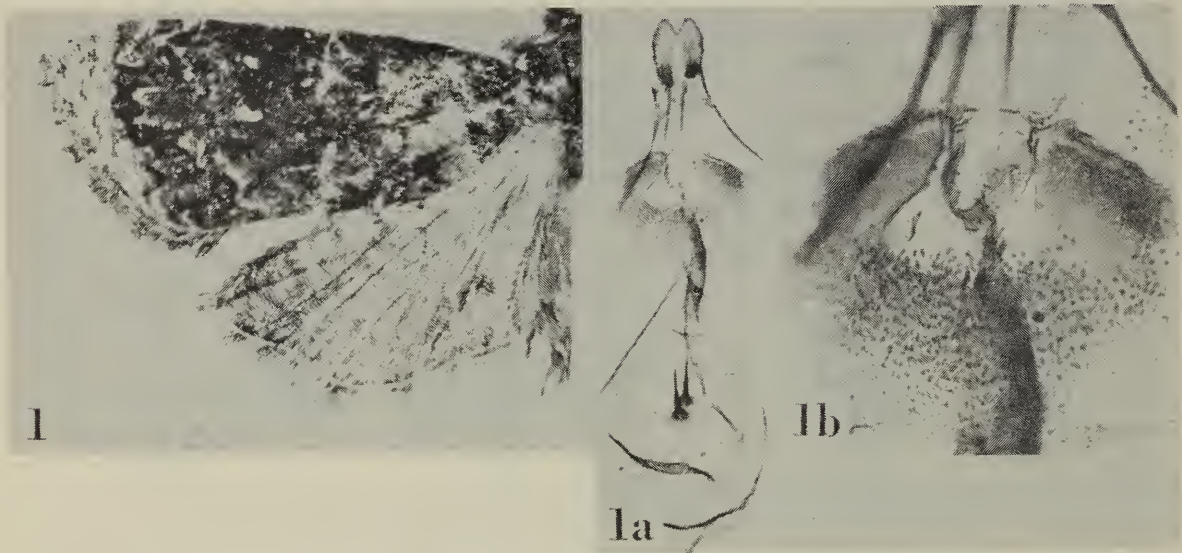


General Distribution of Cryptophlebia leucotreta

Life History and Habits: Cryptophlebia leucotreta resembles the codling moth (Carpocapsa pomonella) in appearance, habits and type of injury; however, it does not attack apple, pear and quince and is reported to cause more premature fruit-drop than C. pomonella. Under South African conditions the life history is as follows: The female, which flies at night, lays about 100 eggs, usually 3-8 per citrus fruit, but only 1-2 larvae survive. Larvae hatch in 4-8 days in summer and 8-14 in winter and enter fruits. The young larvae gnaw through the rind, making burrows about 1 mm. in diameter. Frass thrown out by the insect makes the entrance conspicuous. In oranges the rind surrounding the entrance becomes yellowish to dark brown. The larvae feed for 25-33 days in summer and 35-67 in winter, leave the fruit, then spin cocoons on the soil surface (pupation may occur on the plants in other areas according to reports). The life cycle requires from 45-60 days in summer and 68-100 in winter. There are about 6 generations for a year in this area. Breeding occurs in navel oranges from November to late June and in Valencias from June onward.

*Also called citrus codling moth.
(Olethreutidae, Lepidoptera)

Description: Cryptophlebia leucotreta resembles Carpocapsa pomonella in all stages. ADULT brown, thorax with double posterior crest. Forewings elongate-triangular with prominent dorsal scale projections toward base and beyond middle, which are light brown mixed with white. There is a semioval dark-reddish patch mixed with black and center with white. Hindwings generally lighter grayish-brown but darker toward outer margins. The male has a larger pale-grayish genital tuft, a dense brush of grayish-white hairs on hind legs, and a deep semicircular pocket in the hindwings. EGG translucent white, almost 1 mm. long, flat, oval-shaped with flange around it. LARVA at first yellowish-white with black head, body marked with black spots, each with a short hair. Mature larva about 18 mm. in length, pink above, yellow below. PUPA about 7 mm. long, yellow becoming dark brown, enclosed in white silken cocoon which is normally obscured by adhering particles of soil. (Prepared in Survey and Detection Operations in cooperation with other ARS Agencies and the U. S. National Museum.). CEIR 10(5):1-29-60.



Wings and Female Genitalia of Cryptophlebia leucotreta

Figures (except map): Wings and female genitalia from Clarke, J. F. G. 1958. Catalogue of the Type Specimens of Microlepidoptera in the British Museum (Natural History) described by Edward Meyrick. Vol. 3, 600 pp., London.

Major references: Stofberg, F. J. 1954. Farming in S. Afr. (Pretoria) 29(339): 273-276, 294. Gunn, D. 1921. Union of South Afr. Dept. Agr. Sci. Bul. 21, 28 pp.

INSECTS NOT KNOWN TO OCCUR IN THE UNITED STATES

FIG WAX SCALE (Ceroplastes rusci (L.))

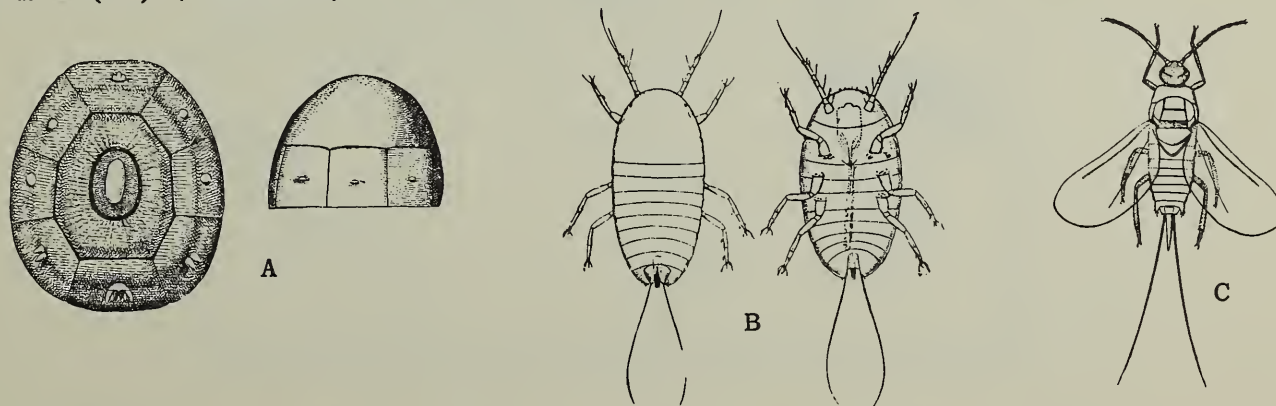
Economic Importance: This coccid is a widespread pest of fig in many parts of the world. The crop is frequently severely injured, especially in the Mediterranean area. Populations build up to high levels then practically disappear for long intervals. Predators and parasites are a major factor in reducing infestations in some areas. Damage occurs from deposits of honeydew and subsequent development of sooty molds and from feeding of second and third-stage females on the branches. Heavily attacked trees become weakened and unproductive. C. rusci attacks many other plants including citrus, olive, camellia, hawthorn and castorbean. It has been frequently intercepted at U. S. ports of entry.

Distribution: Widely distributed in the Mediterranean area. Also reported from other areas but validity of records difficult to confirm. It is not known to occur in the United States, however.

Hosts: Primarily a pest of Ficus spp. Also feeds on camellia, hawthorn, holly, citrus, olive and many other hosts.

Life History and Habits: In Italy, egg laying occurs generally during June. Each female produces around 800-1500 eggs which are retained beneath the abdominal cavity. The larvae fix themselves on the upper surface and along the veins of the fig leaves. By the second stage, they assume a star-shape. Development is rapid, and adults appear by the end of July and migrate over the branches. There are one or two generations a year in Italy depending on the location within the country. There are two generations a year in Algeria and the second-generation females are often very numerous. In France, the females pass the winter in the second stage, reaching the third stage the following spring.

Description: ADULT globose, hemispherical, covered by abundant waxy secretion of a solid consistency which forms a carapace. The secretion is distributed laterally in 8 rectangular plates around the body--3 on each side, one cephalic, one anal. At the center of each plate is a white waxy, punctiform secretion. Anal plates have two white points. The upperside of the insect is covered by a single octagonal plate, the center of which shows an oval halo. The general color of the waxy secretion is a violaceous gray, more deeply colored in sutural zones between the plates. When the wax is removed, C. rusci appears smooth and uniformly brown in color. Dimensions - 4.5 mm. long by 3.4 mm. wide by 2-3 mm. high. Male PUPARIUM elongate, starlike with white waxy cones; 2-2.2 mm. long by 1 mm. wide. MALE is winged, red colored with white wings. (Prepared in Survey and Detection Operations in cooperation with other ARS agencies).
CEIR 10(38) : 9-16-60.



Figures of Ceroplastes rusci: A - Adult female scale; dorsal and lateral view. B - First stage larva; dorsal and ventral view. C - Adult male.

(Coccoidea, Hemiptera)

Figures from Silvestri, F. 1927. Istit. Superiore Agrario di Portici, Regio Labor. di Ent. Agr. Cir. 4, 11 pp., Italy.

INSECTS NOT KNOWN TO OCCUR IN THE UNITED STATES

PEACH BUPRESTID (Capnodis tenebrionis L.)

Economic Importance: This wood borer is one of the most formidable enemies of stone fruit production, particularly peach and apricot, in the Mediterranean Region. In Morocco heavy losses have been reported in young orchards. The insect is regarded as the most serious pest of plum trees in coastal Algeria. Italy also rates it as a major pest of stone fruits.

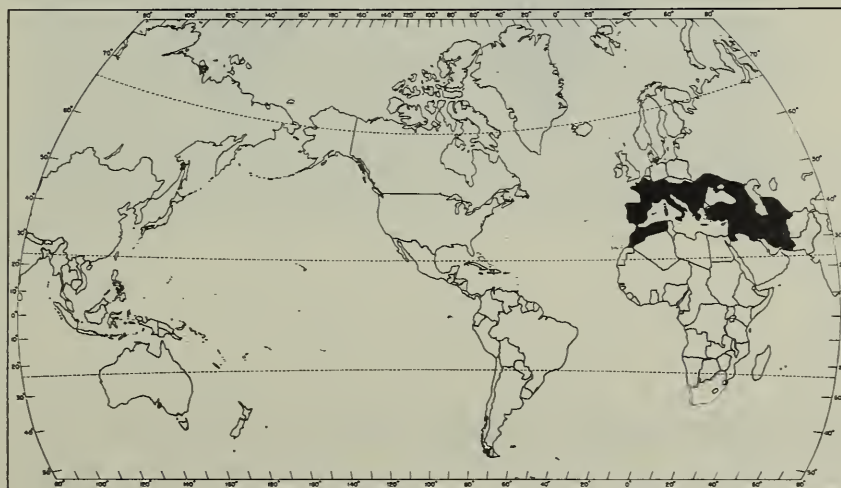


Damage to Apple Tree
by Capnodis sp.

Hosts: Peach, almond, plum, apricot, cherry and other related stone fruits.

Distribution: Occurs generally in the Mediterranean Region and as far east as Iran. Also occurs in Austria, Bulgaria, South Germany, Hungary, Romania, Switzerland, Yugoslavia and parts of the USSR.

Life History and Habits: Adults appear at beginning of May on the coast of Algeria and in Italy. They feed for an indefinite period. Emergence continues over a period of several months with the adults being most abundant from mid-July to early September. The females are much more numerous than the males. The adults are frequently observed in the orchards. Their flight is awkward, noisy and rapid. They feed on the young branches. The damage caused by the adults is of little importance in comparison to that of the

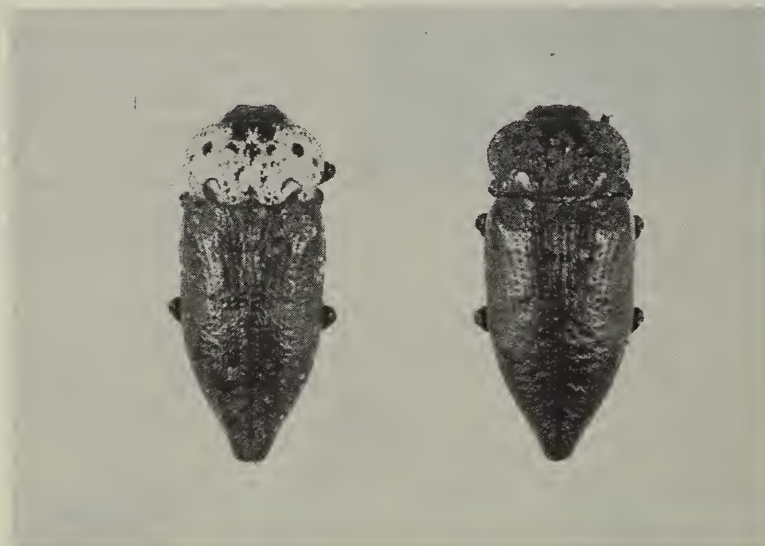


General Distribution of Capnodis tenebrionis

(Buprestidae, Coleoptera)

larvae which almost always kill the young trees which they attack. Mating occurs on small branches of the host in July and oviposition begins shortly thereafter. The eggs are deposited on the trunk at or slightly below ground level. Females lay from 50-120 eggs. The eggs hatch rapidly but larval development is slow, lasting 2 years. One or more larvae may be found per trunk, near or at ground level. They are found under the bark or deep in the wood in large galleries. Normally the larva is found in a "U" shape. The attack is more severe in trees 2 to 3 years of age. Pupation occurs in a cell 3 cm. long in the lower trunk or principal roots. Pupation lasts about one month.

Description: ADULT - This buprestid is large, ranging from 15 to 27 mm. with the males smaller than females. Males rarely over 20 mm. in length. Color generally dull black. Head large, sunk in the thorax. Eyes brown, elliptical. Antennae serriform, 11-segmented, longer than head and folded under prothorax when insect is at rest. Pronotum large, much broader than long, slightly wider than base of elytra, with sides rounded. Surface with dense, pruinose punctures and numerous glazed areas. Elytra sturdy, large, coriaceous, uniformly dull black, 2.5 to 3 times longer than pronotum. Punctuation, under a hand lens, elongate, irregular and arranged in striae. Legs relatively short; tarsi strongly dilated, with curved bristles on internal surface. Ventral surface of body dull black. Underwings membranous, well developed, smoky colored. EGG elliptical, white, opaque, 1 mm. x 1.5 mm. LARVA - Full-grown larva 60-65 mm., white, flabby, legless. General appearance similar to that of other buprestid larvae. (Prepared in Survey and Detection Operations in cooperation with other ARS agencies). CEIR 10(50) 12-9-60.



Adults of Capnodis tenebrionis (Showing Variation)

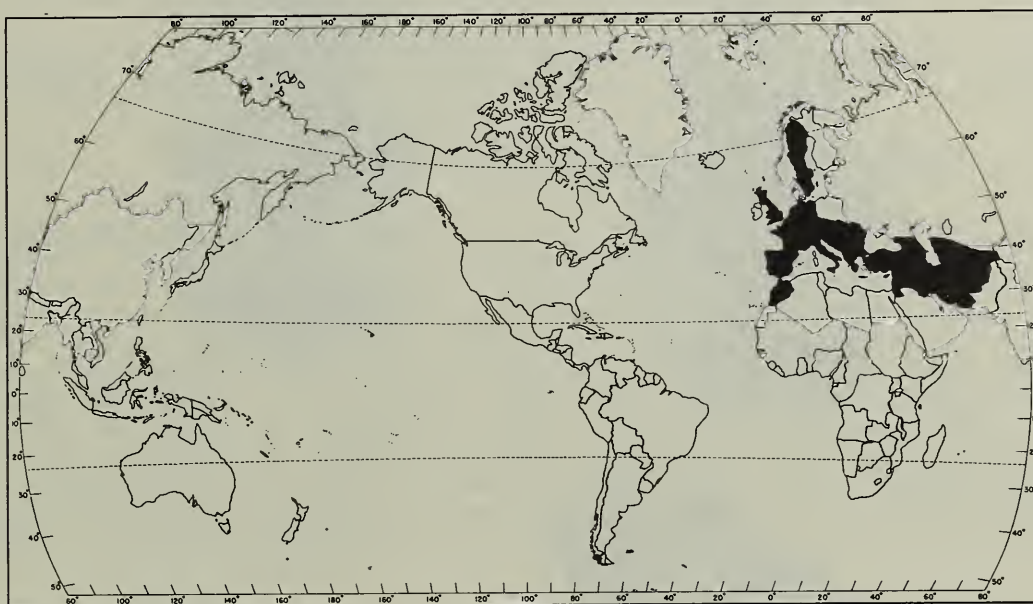
Major reference: Balachowsky, A. and Mesnil, L. 1935. Les Insectes Nuisibles aux Plantés Cultivees, Vol. 1, 1137 pp., Paris.

INSECTS NOT KNOWN TO OCCUR IN THE UNITED STATES

PEAR LACE BUG (Stephanitis pyri (F.))

Economic Importance: This tingid causes significant damage to foliage of deciduous fruits, particularly pear and apple, in wide areas of Europe and Asia. Heavy attacks may cause defoliation leading to complete loss of crop. Such infestations are reported from France and Cyprus. Infestations were heavy in Iran in 1959 on apple and pears, causing chlorosis of leaves on untreated trees.

Distribution: Generally recorded in Europe. Also recorded in Afghanistan, Cyprus, Iraq, Iran, Israel, Jordan, Lebanon, Morocco, Turkey, United Arab Republic (Syria) and USSR (Turkestan, Caucasus, Siberia).



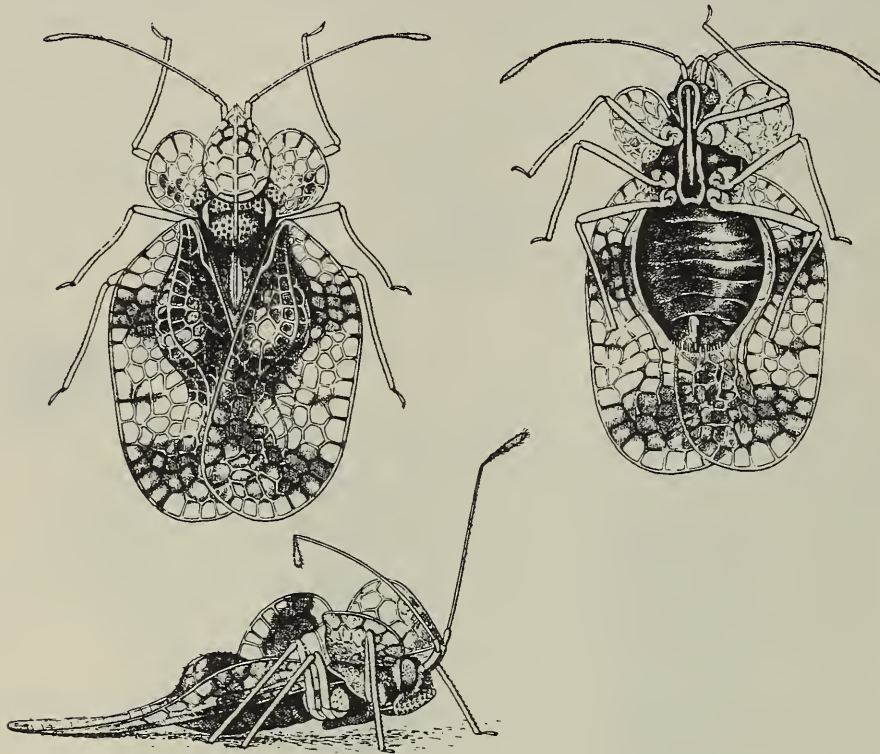
General Distribution of Stephanitis pyri

Hosts: Many deciduous fruits, including pear, apple, peach, apricot, cherry, quince, and currant. Also reported on rose, hawthorn, chestnut, walnut, and oak.

Life History and Habits: Under conditions in France, the insect hibernates as an adult in debris, in the soil, in crevices or other such shelters. Adults become active in May and copulate on leaves. The eggs are implanted in the lower surface of the leaves. The female covers each egg with a drop of excrement forming a little groove. Eggs are generally placed singly but punctures may be so numerous that the leaf surface appears speckled. Incubation lasts 25 to 35 days. Nymphs pass through five molts reaching adult stage in 25 to 30 days. There are two generations a year in the Paris area. Nymphs and adults feed on the lower side of the leaves. The multiple punctures produce a gummy exudate. The underside of the leaves show characteristic spotting while the upper surface becomes discolored.

(Tingidae, Hemiptera)

Description: ADULT 3 to 6 mm. long, very flat and wide. (See illustration). Head and thorax have chitinous, foliaceous and rounded expansions provided with a fine reticulum. Eyes glossy. Antennae long and thin, composed of 4 segments, the third of which is a great deal longer. The hemelytra are subrectangular, large, with rounded angles, transparent, parchmentlike, marked transversally with two smoky spots. The cuticle of the hemelytra is finely divided into reticulate cells of uneven size. Hindwings transparent and veined. Abdomen (beneath) and legs shiny black. (Prepared in Survey and Detection Operations in cooperation with other ARS agencies). CEIR 10(18):4-29-60.



Adult of Stephanitis pyri (3 views)

Major reference and figures (except map): Balachowsky, A. and Mesnil, L. 1935. Les Insectes Nuisibles aux Plantes Cultivees. Vol. 1, 1137 pp., Paris. (pp. 277-281).

INSECTS NOT KNOWN TO OCCUR IN THE UNITED STATES

ANDEAN POTATO WEEVILS (Premnotrypes spp.)

Economic Importance: In 1914 potatoes from Peru were found infested with weevil larvae. The larvae were reared and the specimens described by W. D. Pierce as Premnotrypes solani and Trypopremnon latithorax: (latithorax was later transferred to Premnotrypes). Since that time, South American potatoes infested with larvae of Premnotrypes spp. have been intercepted at ports of entry on several occasions. In addition to the two species mentioned, P. vorax is also considered to be of some economic importance. Altogether, there are six species in the genus recorded as infesting potatoes in parts of South America. As the common name indicates, these insects are principally damaging at higher elevations although isolated cases of infestations have been found in the coastal regions.

Distribution: P. latithorax (Pierce), Bolivia, Peru and Chile; P. solani Pierce, Peru; P. vorax (Hust.), Colombia and Ecuador.

Host: Potato. Also may attack Solanum wittmackii in rare cases.

Life History and Habits: Life history and habits of the weevils covered here are very similar. Adults are active in potato plantings from August to December in Peru feeding on leaves and tubers. The females enter the ground and deposit eggs in the soil or on developing tubers. Hatching occurs about January and the larvae are active until July. The larvae bore into the tubers producing irregular galleries and tunnels about 1 cm. in diameter. The entrance hole heals and the presence of the larvae in the tuber cannot be detected from outside examination. Usually only one larva is found per tuber but as many as 20 or more have been reported. When a tuber is consumed, the larvae may migrate to others. Upon reaching full development, the larva forms an oval cavity in a gallery just beneath the peel of the potato and pupates. Pupation takes place in July and August. Apparently there is only one generation a year.

Description: P. solani Pierce, type of genus. Length, 7mm.; breadth, 3.75 mm. Color brown, with bronzy scales. Rostrum thick; narrowest at middle. Alae strongly flared; scrobes open above. Head with small tubercles above the eyes. Median line sharply defined, deepened at frontal fovea, then bifurcate to form a median ridge. The fine median line begins again on this ridge and extends to the apex. Beginning even with the front edges of the eyes the lateral impressions extend half the length of the beak. Apex of beak shining black, nasal plate raised. Mandibles bidentate, shining black. Antennal scrobes strongly flexed downward; scape clavate; funicle with all joints longer than wide, gradually decreasing in size toward apex; club elongate; first two joints occupying over half the bulk. Head, beak, and scape densely covered or clothed with fine, silky, bronzed scales; funicle sparsely pubescent; club minutely pubescent. Prothorax basally truncate, apically sinuate, ocular lobes prominent, without vibrissae; coarsely punctured, finely squamose with yellowish to golden metallic scales; median line punctate, strongly impressed; surface with six basal, two discal, and four apical tubercles; widest behind middle at points of lateral basal tubercles. Elytra at base no wider than thorax; humeri rounded; sides rounded, rough, wider than prothorax. Scutellum minute, triangular, depressed. Surface densely minutely scaly; striae irregular, with small definite punctures; entire surface rough, but the third, fifth, and seventh intervals especially are raised by a series of small tubercles, which

give the striae a wavy direction. Prosternum strongly arcuately emarginate, not more than one-half as long as pronotum. Anterior coxae contiguous. Mesosternum taken up almost entirely by the coxae, which are narrowly separated; side pieces unequal. Metasternum also short. Undersides and legs densely squamose. (Prepared in Survey and Detection Operations in cooperation with other ARS agencies). CEIR 10(48) 11-25-60.



Adults of Premnotrypes spp.: 1,2 - P. solani; 3 - P. latithorax

Major references: Kuschel, G. 1956. Mus. Nac. Hist. Nat. Bol. 26:187-235, Chile; Munro, J. A. 1954. FAO Plant Prot. Bul. 2(7):97-101; Willie, J. E. 1952. Entomologia Agricola del Peru, pp. 401-405, Lima; Pierce, W. D. 1914. Jour. Agr. Res. 1(4):346, 349-350.

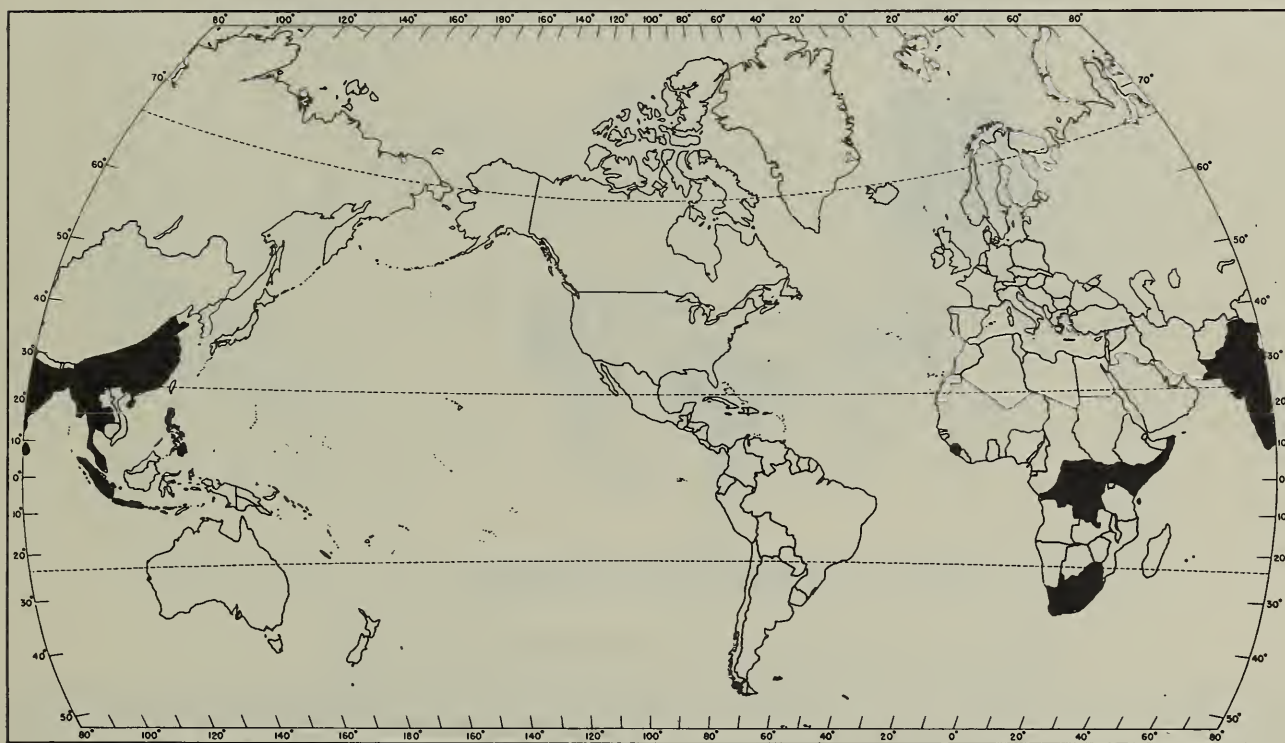
INSECTS NOT KNOWN TO OCCUR IN THE UNITED STATES

EGGPLANT FRUIT BORER (Leucinodes orbonalis Guen.)

Economic Importance: This pyraustid has been an important pest of eggplant in Pakistan for many years. Serious outbreaks were recorded in some areas in 1957-58. Injury to this crop is reported from other areas of the Indian region. The borer is also a pest of potatoes in parts of the Belgian Congo where it causes up to 50 percent loss of the crop. It has been intercepted at U. S. ports of entry on several occasions.

Distribution: Belgian Congo, Burma, Ceylon, China, Indonesia (Sumatra, Java), India, Kenya, Malaya, Pakistan, Philippine Islands, Sierra Leone, Somalia, Thailand, Uganda and Union of South Africa. This pest has also been intercepted from several West African countries, including Liberia, Nigeria and Ghana.

Hosts: Eggplant, potato, tomato, Cape gooseberry, black nightshade, wild eggplant, Physalis minima and Solanum xanthocarpum.

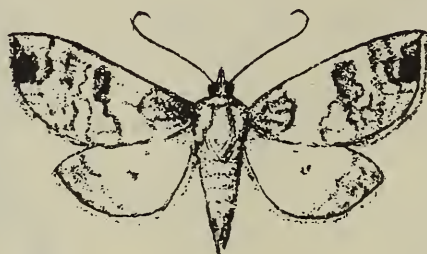


General Distribution of Leucinodes orbonalis

(Pyraustidae, Lepidoptera)

Life History and Habits: Moths oviposit on young leaves and terminals of potatoes in Belgian Congo. The larvae feed in the leaves then move to the stalk as leaves dry. Attack may kill entire plant. Eggs on eggplant hatch in 3 or 4 days in India. The larvae bore into petioles, shoots, stems and fruit, causing wilting. After feeding from 8 to 26 days, the larvae pupate in cocoons on stems, in folds of leaves or in the ground. Adults emerge one to two weeks later. There are about 3 generations a year.

Description: ADULT expanse around 24 mm. Forewings white, marked with black and ferruginous spots while hindwings are opalescent, marked with black dots. Both wings also with marginal row of black dots, the apical and middle dots being somewhat larger. Body speckled with ochreous-brown, abdomen whitish at base, palpi and legs white, bands on palpi and forelegs ochreous-brown. LARVA rose-colored with no obvious distinctive markings. At completion of development measures 20 to 22 mm. (Prepared in Survey and Detection Operations in cooperation with other ARS agencies). CEIR 10(17):4-22-60.



Adult of Leucinodes orbonalis

Major reference: Ghesquiere, J., 1931 - Soc. Ent. Belgique Bul. et Ann. 71 (6/8): 131-138.

Figures (except map): Moore, F., 1887. The Lepidoptera of Ceylon. Vol. III. 578 pp., London (p. 289).

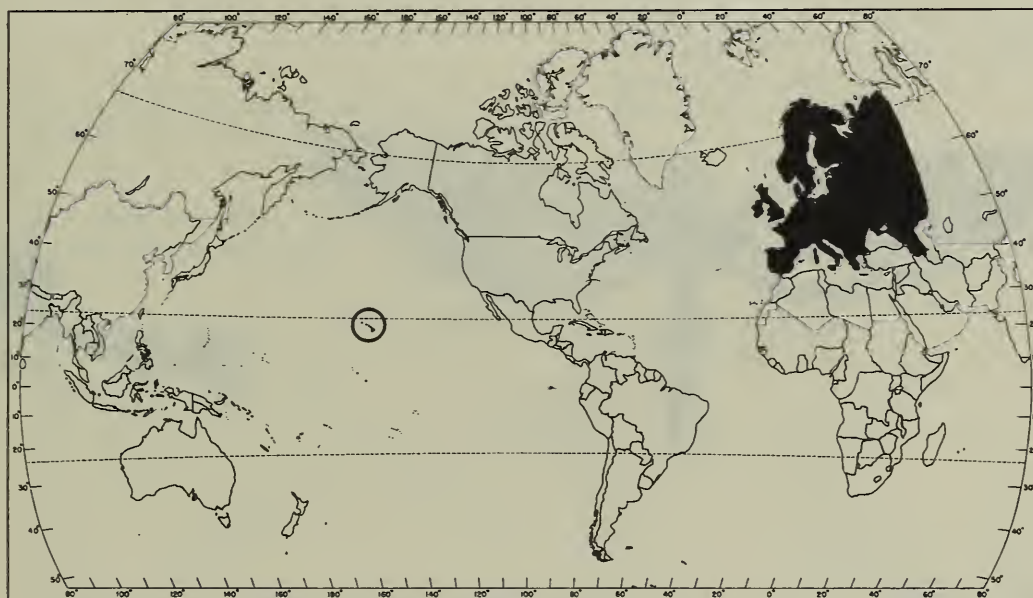
INSECTS NOT KNOWN TO OCCUR IN THE UNITED STATES

LEEK MOTH (Acrolepia assectella (Zell.))^{1/}

Economic Importance: This hyponomeutid causes heavy damage to leeks, onions and related crops in Europe by mining and feeding within the foliage and bulbs. Damage is followed by extensive rotting. The larvae also feed on the seed stalk, preventing formation of seed. Infestations in leek in Italy increase in intensity during the growing season, reaching 40 percent or more by late summer. Injury to onions in England is apparently less severe than that on leeks. Combined damage from this species and the onion maggot (Hylemya antiqua) on leeks in Holland has run as high as 80 to 90 percent. In some areas, the moth is regarded as more damaging than the maggot. Acrolepia assectella is frequently intercepted at U. S. ports of entry. It has been reported from Hawaii where it attacks onions.

Distribution: Generally distributed in Europe, including British Isles. Also reported from Hawaii.

Hosts: Onion, leek, garlic, chive.



General Distribution of Acrolepia assectella

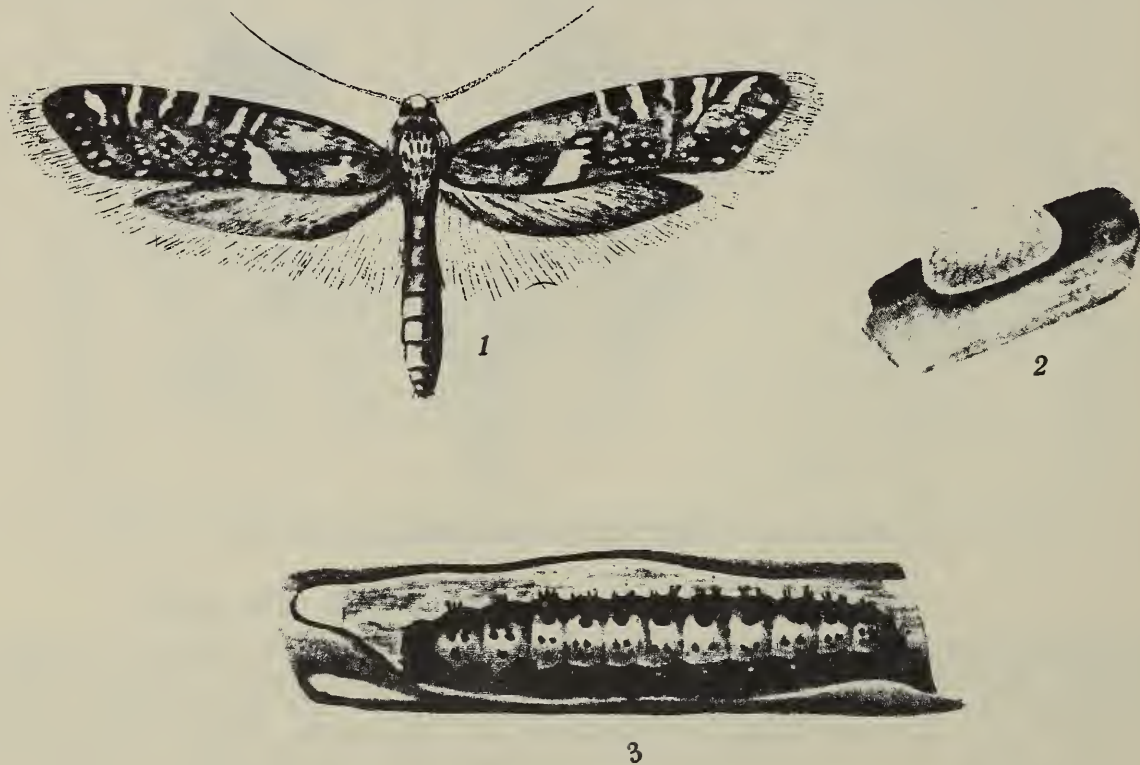
Life History and Habits: The moth flies at night in an irregular zigzag pattern. Copulation occurs in the early morning and lasts for several hours. Egg laying begins shortly thereafter. Each female lays about 100 eggs during the month of May. These are placed singly at the base of the onion, leek or garlic plant. Hatching occurs in 5 to 8 days and the young larva perforates the epidermis and makes a gallery 2 to 5 mm. long. After about 5 days the larva moves to the heart of the plant and bores in all directions. The affected plants yellow at the extremities, the central leaves show perforated and transparent streaks in irregular bands. After 15 to 20 days, the larva leaves the plant and pupates in a cocoon on the foliage or other support. In about 2 weeks moths emerge. The second generation feeds during August. Pupation takes place in September and

(Hyponomeutidae, Lepidoptera)

^{1/} Except the State of Hawaii.

part of the moths emerge and overwinter in sheltered locations. The remainder of the moths do not emerge until the following spring. This is the life history of A. assectella under French conditions. Five or six generations a year are reported for Italy.

Description: ADULT expanse 16-18 mm. Head red; antennae, thorax and abdomen brownish. Hindwings clear gray with long fringe. Spread forewings brownish-black with terminal third whitish, fringe brownish with intermingled black scales. Two white spots occur on the posterior border. Antenna simple in both sexes. Maxillary palps short and erect. EGGS 0.5 by 0.2 mm., reniform, white. Full-grown LARVA about 5 mm. long, clear greenish. Head, pronotum and thoracic legs yellow. Each abdominal segment has 4 small black plaques dorsally, each with a seta, and laterally 4 similar ones on each side. COCOON grayish or brownish, pupa about 7 mm. long. (Prepared in Survey and Detection Operations in cooperation with other ARS agencies and the U. S. National Museum). CEIR 10(14):4-1-60.



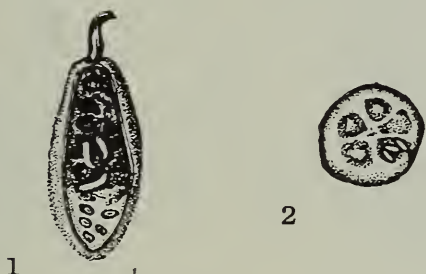
Adult (1), Egg (2) and Larva (3) of Acrolepia assectella

Figures (except map): Adult, egg and larva from Volkov, S. M., Zimin, L. S., Rudenko, D. K. and Tupenevich, S. M., 1955. Album of Pests and Diseases of Agricultural Crops of the non-Chernozem Area of European USSR. Table 72. (In Russian).

INSECTS NOT KNOWN TO OCCUR IN THE UNITED STATES

LESSER PUMPKIN FLY (Dacus ciliatus (Loew))

Economic Importance: This fruit fly is a common pest of cucurbits throughout a large part of Africa and in India, but apparently not as serious as the melon fly (Dacus cucurbitae) in areas of India where both species occur. Heavy infestations of D. ciliatus have been reported in South Africa and serious damage is thought to occur in Egypt, where the damage caused by this pest was most likely mistaken for the similar injury caused by the fly (D. longistylus) in years prior to 1953. D. ciliatus was first reported in India in 1914 and was first collected from Ombo, Upper-Egypt, in February 1953.



1 - Longitudinal Section of Ivygourd Fruit Showing Larvae

2 - Transverse Section of Fruit Showing Eggs

Distribution: Occurs throughout most of Eastern and Central Africa, Malgache Republic, Mauritius, the Arabian Peninsula and India.

Hosts: Cucurbits are the principal hosts, with several other crops apparently of less importance. Recorded on milkweed, redpepper, watermelon,



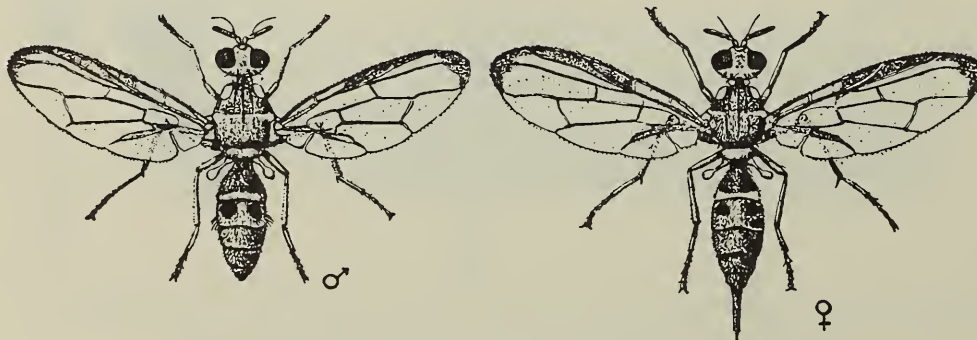
General Distribution of Dacus ciliatus

(Tephritidae, Diptera)

citrus, ivygourd, muskmelon, Cucumis metuliferus, gooseberrygourd, cucumber, winter squash, cushaw, pumpkin, yellowflowergourd, Gliricidia sepium, calabash gourd, Singkwa towelgourd, common tomato, balsampear, Momordica involucrata, M. schimperiana, bluecrown passionflower, bean chayote and edible snakegourd.

Life History and Habits: Biology as recorded in State of Madras, southern India, is as follows: Preoviposition period lasts approximately 4 days. Eggs are deposited in a hole made in the fruit by the female, often near the stalk. As many as 8 eggs are deposited in each hole. Generally, however, one hole contains 3-4 eggs. When more than 10-12 eggs are deposited in a single fruit, larvae do not obtain sufficient nourishment and subsequent pupae and adults are undersized. Mature larvae drop to the ground, either in shriveled skins of infested fruits or before these fall. Larvae leave infested fruits and enter the soil for pupation, the depth varying from 0.5 to 2 inches. Adults emerge between 8 and 10 a.m. Infested fruits are first ridged by brown, dried liquid over the oviposition puncture. After 2 days, a hollow develops at the point of oviposition and the surrounding tissues become soft and brown; after 4-5 days, the whole fruit becomes discolored, unless it contains only a few larvae, and falls. Under laboratory conditions, in September and October, when the mean shade temperature was 62.2-89.3° F. and the relative humidity 69.1-78.9 percent, the egg, larval and pupal stages lasted 2-4, 4-6 and 8-10 days, respectively. Development period lasts 15-17 days, and there are 6 generations a year.

Description: ADULTS - Female: Body more or less dark fulvous yellowish-brown; face with 2 large black spots and 1 brown spot on the peristome near the lower part of the eyes; thorax with the scutum a little darker than the rest of the body, with a median presutural line and 2 submedian postsutural black spots, which may be more or less evident (very evident in alcoholic specimens, almost invisible in those preserved dry); humeral calli, suture, pleurae opposite the suture, hypopleural spot and the scutellum yellowish-white or ochraceous. Wings are illustrated below. Scapulars in 2 pairs. Seventh segment from above, 1.5 mm.; ovipositor from above, 1.56 mm. in length. Length of body 6-7 mm. Male: Sides of third abdominal segment provided with a posterior row of setae. Forceps of copulatory organ with the outer side of the lower lamina longer than the inner, attenuated and arcuate. EGG - About 2.5 mm. in length, shiny white, slightly curved, cylindrical and narrow at one end. LARVA - Mature larva measures about 8 mm. in length and 1.4 mm. in width. Mandibular hooks of mouth parts provided each with a preapical tooth and oral lobes, which are well developed; each has 15 laminated ridges. Several dorsal spines present on first 3 postcephalic segments and few on 4th and 5th. Each anterior spiracle provided with 14-16 lobes. PUPARIUM - Elliptical and brownish; about 4.5-5.5 mm. long and 2-2.5 mm. wide. (Prepared in Survey and Detection Operations in Cooperation with other ARS Agencies). CEIR 10(52):12-23-60.



Adults of Dacus ciliatus

Major references: 1. Bezzi, M. 1915. Bul. Ent. Res. 6(2):85-101. 2. Azab, A. K. and Kira, M. T., 1954. Soc. Fouad 1^{er} d'Ent. Bul. 38:379-382. 3. Cherian, M. C. and Sundaram, C. V., 1939. Indian Jour. Agr. Sci. 9(1):127-131. (Figures - except map - from Cherian and Sundaram).

INSECTS NOT KNOWN TO OCCUR IN THE UNITED STATES

MELON STEM BORER (Apomecyna binubila Pascoe)

Economic Importance: Although cerambycids are generally wood borers, certain members of this genus prefer the more succulent stems of cucurbitaceous plants.

The larvae of Apomecyna binubila are sometimes serious pests of melons in Sudan. Cucurbits are also damaged in some areas of South Africa. Feeding by adults is negligible but larval damage to stems may be extensive.

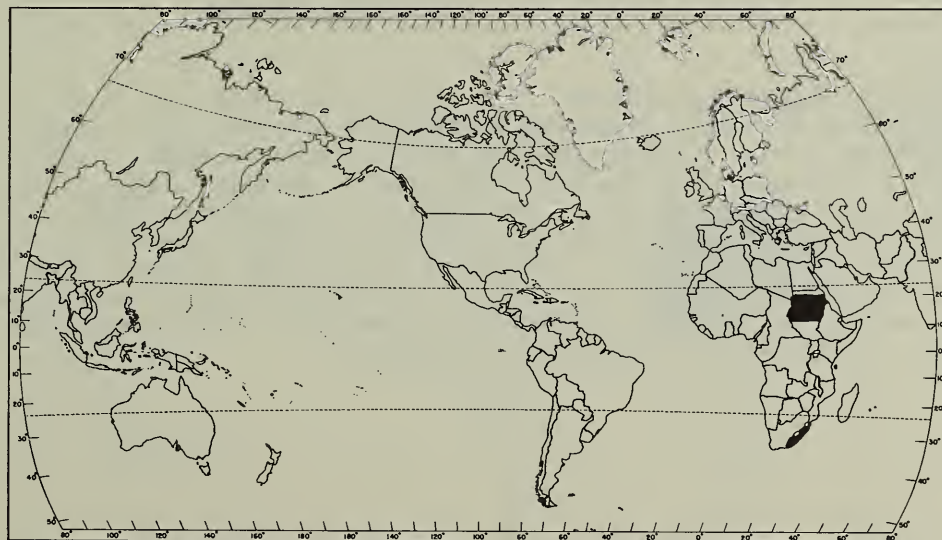
Distribution: Sudan (between 12° and 20° latitude), South Africa (Natal and Eastern Cape Province).

Hosts: Cucurbits, including watermelon and pumpkin.

Life History and Habits: Adult is inactive, seldom flies. Females deposit eggs in melon stems. Oviposition sites become covered with a dark brown exudate. The eggs hatch in about 4 days, and the larvae feed in the stems, apparently passing through six instars. Their presence leads to splitting, cracking, and discoloration of stems and dying of leaves. In high infestations there may be as many as five or more larvae per four inches of stem. Such an infestation at the base of the plant will kill the plant. The larval period lasts about 25 days and pupation takes place within tunnels in the stems.



Larval Damage to Melon Stems

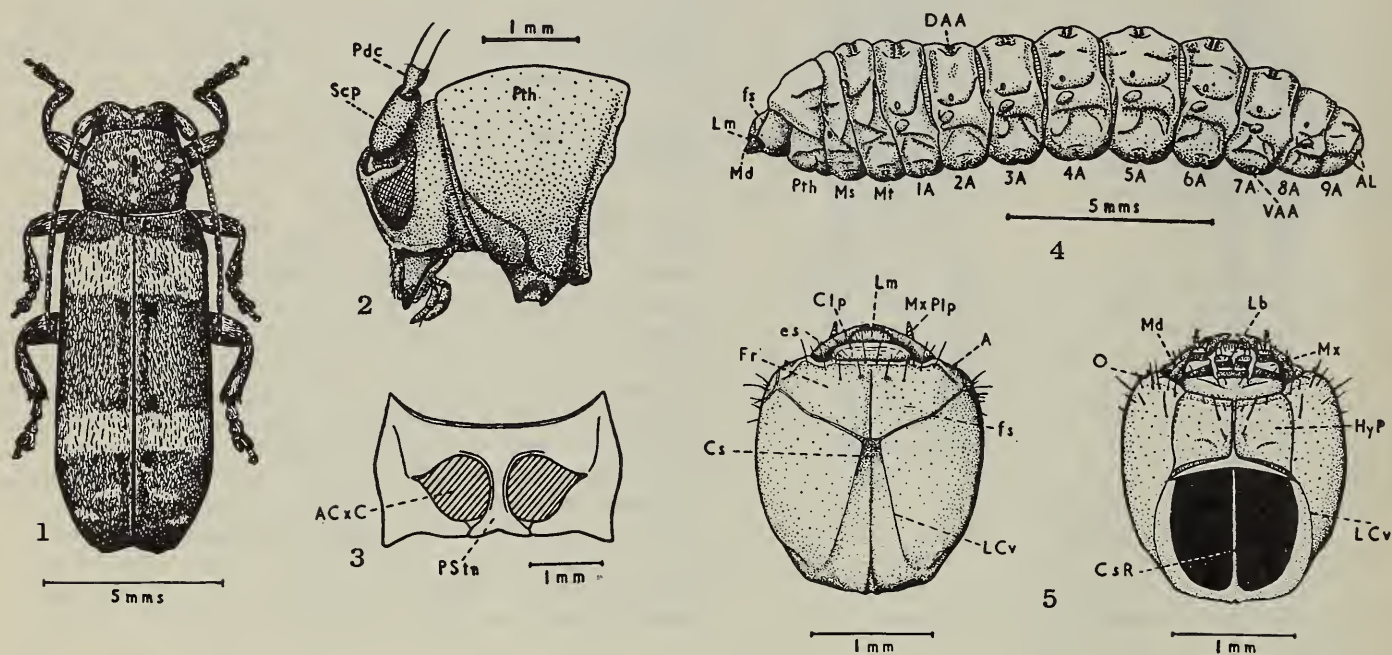


General Distribution of Apomecyna binubila

(Cerambycidae, Coleoptera)

The life cycle in Sudan requires about 35 days. Breeding may be continuous in this area but a winter diapause is reported in South Africa.

Description: ADULT elongate, slightly depressed. Length, 10-12.5 mm. Dark brown, shining, covered by dense white and yellow-brown decumbent pubescence; coarsely to finely serially punctate. Dark brown body gives gray appearance to areas covered by white pubescence and dark yellow-brown appearance to regions overlaid by yellow-brown hairs. (See illustration). Antennae filiform, extending two-thirds length of body; 11-segmented. Full-grown LARVA cylindrical, tapering slightly anteriorly and posteriorly. Soft white or whitish-yellow with sparse covering of thin yellow setae. Average length about 17 mm. (Prepared in Survey and Detection Operations in cooperation with other ARS agencies).
CEIR 10(49) 12-2-60.



Figures of *Apomecyna binubila* Pascoe: 1 - Adult; 2 - Head of adult, lateral aspect. 3 - Prothorax of adult, ventral aspect. 4 - Larva. 5 - Head of larva, dorsal and ventral aspects. **Abbreviations used:** (A) antenna; (1A)-(9A) abdominal segments; (ACxC) anterior coxal cavity; (AL) anal lobes; (Clp) clypeus; (Cs) coronal suture; (CsR) coronal ridge; (DAA) dorsal ambulatory ampulla; (es) epistomal suture; (Fr) frons; (fs) frontal suture; (HyP) hypostomal plate; (Lb) labium; (LCv) line of attachment of neck membrane; (Lm) labium; (Md) mandible; (Ms) mesothorax; (Mt) metathorax; (Mx) maxilla; (MxPlp) maxillary palp; (O) ocellus; (Pdc) pedicel of antenna; (PSTn) prosternum; (Pth) prothorax; (Scp) scape of antenna; (VAA) ventral ambulatory ampulla.

INSECTS NOT KNOWN TO OCCUR IN THE UNITED STATES

STRAWBERRY LEAF BEETLE (Galerucella tenella L.)

Economic Importance: This chrysomelid is an important pest of strawberry plants throughout many areas of Europe. Sporadic outbreaks of the pest have caused considerable reduction of yield in some areas. The insect does not generally kill the plants, but if infestation occurs two years in a row, the crop is considerably reduced. Larvae and adults feed on the lower and upper epidermis of the leaves and on the soft underlying tissue of strawberries, leaving opposite layer of epidermis intact. Leaves present a characteristic spotted appearance. If leaves are weathered, they will appear as if regular holes had been eaten out.



Damage to Strawberry Leaf

Hosts: Strawberry, ladysmantle (Alchemilla sp.), European meadowsweet, spiraea.

Distribution: Occurs throughout most of Europe and extends into western Siberia in Asia.

Life History and Habits: In Latvia SSR, the biology was recorded as follows: Eggs are laid in small groups of 2-5 on leaves of host plants. The species prefers damp places and does not migrate to any great degree. Overwintered adults appear in second half of April and feed on stems and upper surface of leaves of strawberry, seriously injuring plants. If the leaves are touched, the beetle drops to the ground. Oviposition occurs from early May until mid-July, the eggs being laid singly, or in small batches, on stems or upper surface of leaves. Eggs are normally deposited in a hole in the leaf surface. The maximum number of eggs oviposited in an insectary was 312. Larvae hatch in 21-32 days. While feeding, they migrate from plant to plant, but do not travel great distances. Larval damage can be severe. The larval stage lasts 22-28 days, and pupation occurs in the soil near the surface.

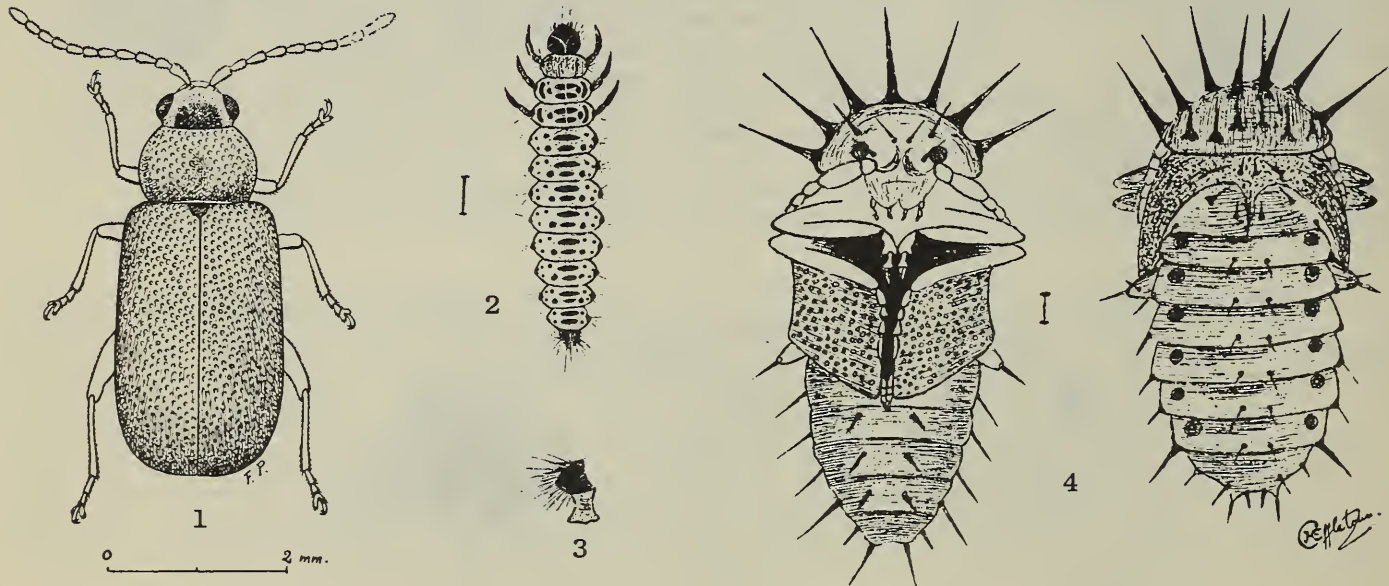


General Distribution of Galerucella tenella

(Chrysomelidae, Coleoptera)

Young adults emerge in about 15 days and feed until the end of August, when they enter the soil, 2-4 inches deep, for hibernation. Some individuals remain on the plants as late as mid-September.

Description: ADULT - Similar to the elm leaf beetle (*Galerucella xanthomelaena*), but much smaller, 2.75-3.5 mm. in length, and does not have the dark stripe along the sides of each elytra. *G. tenella* is a rather broad species, with yellowish antennae (dark at apex) and pubescence scarce on thorax. Third joint of antenna longer in proportion than the second. Head short, with narrow genae and rather short mandibles. Pair of callosities on forehead distinct and shining; median impression of thorax distinct; subocellate punctures of elytra not deep. Epipleura of elytra continued to apex, with sutural apical angle produced; suture and margin of elytra yellow, with shoulders dark. Legs pale; femora comparatively slender. Central line of thorax and humeral callosities usually infuscate and occasionally elytra marked with a more or less obsolete dark band. Sexual characters different; male with fifth ventral segment of abdomen slightly impressed at apex; same segment in female being almost entire. LARVA - Length 3.2-4.2 mm. Color, dirty greenish-yellow, head black. All segments of body, with exception of head, pronotum and anal segment, with pair of elongate, transverse, rather broad stripes; cephalad stripe being longer than the caudad one. Stripes on meso and metathorax separated as shown in figure below. Dorsal segments transversely furrowed. Each segment of body, with exception of thoracic region, has four shining black tubercles on each side. Tubercles vary in size; largest near transverse stripes. Pronotum free of markings or tubercles and uniformly dark brownish-gray. Meso and metanota have 2 tubercles instead of 4 on each side; inner pair somewhat round, outer pair much larger and somewhat crescent-shaped. Terminal segment brownish-gray and more hairy than rest of body. Legs black, each with 2 sharp claws. Anal segment possesses a large and simple proleg. Body covered with more or less numerous yellow hairs. (Prepared in Survey and Detection Operations in cooperation with other ARS agencies). CEIR 10(51) 12-16-60.



Figures of *Galerucella tenella* L.: 1 - Adult. 2 - Larva. 3 - Anal proleg of larva, lateral view. 4 - Pupa, ventral and dorsal views.

Major references: Fowler, W. W. (1890?), The Coleop. Brit. Ids., Vol. IV, p. 330, London; Efflatoun, H. C., 1918, Ann. Appl. Biol. 4(4):206-210, illus. of larva, pupa, and damage; Ozols, E., 1929, Folia Zool. Hydrobiol. 1(1):113-147. Figure of adult from Balachowsky, A. and Mesnil, L. 1935. Les Insectes Nuisibles aux Plantes Cultivees. 1137 pp. Paris.

INSECTS NOT KNOWN TO OCCUR IN THE UNITED STATES

A SUGAR-BEET CROWN BORER (Gnorimoschema ocellatella (Boyd))

Economic Importance: This gelechiid is a very important pest of beets in several areas of Europe, North Africa and the Middle East. Damage is most evident from



Damage to Beet

July to October, when the late generations are more prevalent. During certain outbreak years, up to 100 percent of the crop will be infested. As many as 20-25 larvae per plant have been recorded in Italy. The larvae cause extensive leaf damage as well as considerable damage to the roots. Larval galleries can be found running 3 to 4 centimeters deep into the roots. The inner leaves of the leaves of the plant are destroyed and the weight and sugar content of the roots are greatly reduced. Damage in many instances continues after the crop has been harvested. Larval webbing promotes mold growth and causes concern only in periodic outbreak years. Meteorological factors and parasites seem to be the limiting factors in population development.

Distribution: Recorded in the literature from France, Germany, Italy, Czechoslovakia, Spain, USSR (southern UKSSR, Moldavia, Caucasus, Crimea), Turkey, Iran, United Arab Republic (Egypt) and Morocco. The species is reported to occur throughout all of Europe, but research in Germany indicates that a similar species, P. atriplicella, may replace this species in the more northerly areas.



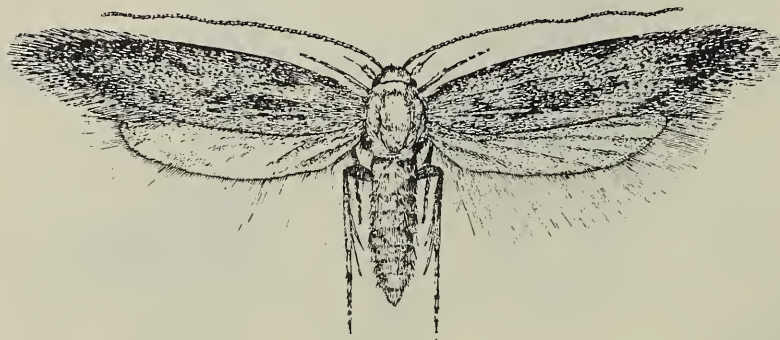
General Distribution of Gnorimoschema ocellatella

(Gelechiidae, Lepidoptera)

Hosts: Beets (Beta cicla, B. vulgaris maritima, B. sacchariera).

Life History and Habits: The biology of the pest as recorded in Italy is as follows: The adults first appear during early May and fly about quickly in search of young plants to deposit their eggs. Larvae, upon hatching, begin feeding on the succulent growth, excavating galleries in the midribs, leaf stalks and the roots. Often, a black, rotting mass is clearly visible on the infested plants due to mold development on the excreta, feeding residue and foreign bodies which are trapped in the silk threads spun by the larvae. Pupation takes place in silken cocoons, which may be rolled-up in the ends of the outer leaves, in chambers made from the central leaves which are tied together, or in feeding galleries. Duration of the life cycle, as well as the number of generations, varies considerably according to climatic conditions. In the northern area, the life cycle lasts 28-30 days and there are 2 generations, but in the central and southern areas, the cycle is completed in 20-23 days and 3-4 generations develop. The various generations overlap, however, and adults, larvae and pupae can be found together in August, September and October.

Description: ADULT - Body about 5 mm. long; wing expanse 13-14 mm. Forewings basically gray-brown or gray pale-yellow with small black, more or less distinct, spots surrounded by a light ring. Hind wings gray pale-yellow, with fringe of hairs a little lighter in color. Antennae with a series of yellowish-gray scales around the base and with another series of brown or black scales situated near the extremity. LARVA - Young larvae are more or less light green, changing color as they mature. The changes are as follows: The dorsal region becomes reddish and some rosy longitudinal lines are more or less distinctly expressed, while the ventral region takes on a straw-yellow color. The head, prothoracic segment and last abdominal segment are dorsally darkened. Length of mature larvae is 10-12 mm. (Prepared in Survey and Detection Operations in cooperation with other ARS agencies and the U. S. National Museum). CEIR 10(7):2-12-60



Adult of Gnorimoschema ocellatella

Major reference and figures (except map): Adult and damage from Menozzi, Carlo, 1947. *Animali e Vegetali Danannosi Alla Barbabietola da Zuccherio e Mezzi per Combatterli*, pp. 49-54, Genova.

INSECTS NOT KNOWN TO OCCUR IN THE UNITED STATES¹

SWEETPOTATO STEM BORER (Omphisa anastomosalis (Guen.))

Economic Importance: This pyraustid borer is a serious pest of sweetpotatoes in the Indo-Malayan Region and Hawaii. In Hawaii it has been referred to as perhaps the most injurious enemy of this crop, but in China it is reported to be a minor pest. The larvae damage both roots and stems and may kill the plants. The insect has been intercepted occasionally at U. S. ports of entry.

Distribution: China, Formosa, India, Ceylon, Japan, Burma, Indonesia (Java), New Guinea, Thailand, Philippine Islands, Hawaii, Malaya.

Hosts: Sweetpotatoes. Also reported from some other vegetable crops.



General Distribution of Omphisa anastomosalis

Life History and Habits: In Hawaii, eggs are laid singly or in groups of 2 or 3 in crevices in the stems or on the leaves. The young larvae bore into the stem and roots where they tunnel and feed. The larvae spin a light cocoon and pupate within the plant parts. One report shows that a female in confinement in Hawaii laid 70 eggs in one night. In this case, the egg stage lasted 6 days, larval period 27 to 36 days and the pupal period 12 to 16 days.

(Pyraustinae, Lepidoptera)

1- Excluding Hawaii

Description: Full-grown LARVA 25-30 mm. long by 3.5 mm. wide; pale yellowish-white with conspicuous brown, very broad, flat setiferous plates; head yellowish-brown, a black line on postero-lateral margin, ocelli black except the two upper and lowest one which are white, mandibles black; prothoracic shield pale yellowish with markings; dorsal tubercles large, in two rows, beginning with mesothorax, two per segment, except on the anal, and abdominal segments 8 and 9. PUPA about 16 mm. long by 3 mm. wide, nearly cylindrical, abruptly tapering at the two posterior segments; uniform medium brown with a slightly darker band on posterior margin of abdominal segments. Wing cases pointed, extending to posterior margin of fourth abdominal segment. Cremaster very short, blunt with a few hooked spines. Pupa is formed in slight cocoon. (Prepared in Survey and Detection Operations in cooperation with other ARS agencies). CEIR 10(44):10-28-60



Adult of Omphisa anastomosalis

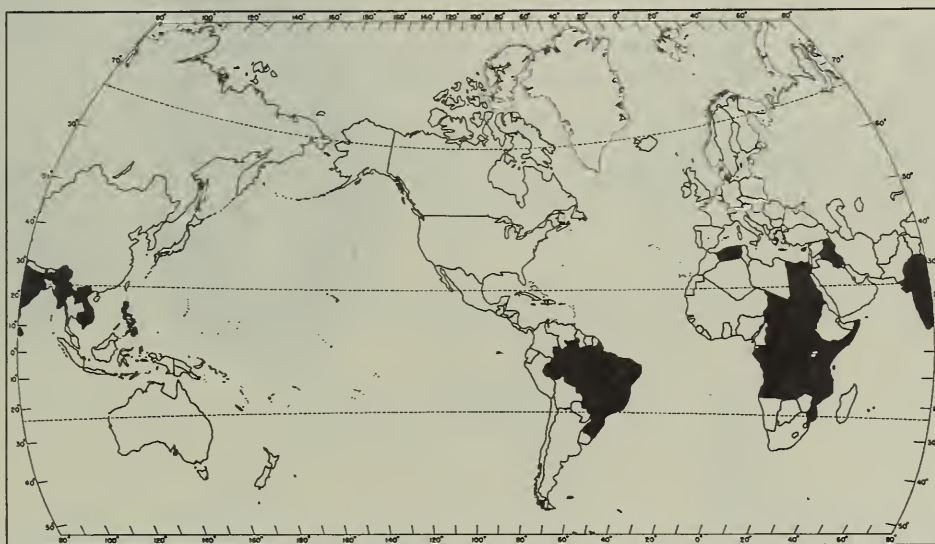
Major reference: Zimmerman, E. C., 1958, Insects of Hawaii, Vol. 8: 45-49.

INSECTS NOT KNOWN TO OCCUR IN THE UNITED STATES

COTTONSEED BUG (Oxycarenus hyalinipennis Costa)

Economic Importance: This lygaeid attacks the seed of cotton in the field as the bolls open. Weight loss in cottonseed in Egypt has been estimated at 2.5 to 15 percent, annually. Severe infestations in that country may cause loss of vitality in as much as 3/4 of the seed. Staining of the lint also occurs. Populations build up to high levels in Egypt and the Sudan. Several other African countries report the insect as being of some economic importance. In Brazil, observations indicate the insect is generally a minor pest of cotton, but it can become a nuisance problem in stored unginned cotton. O. hyalinipennis has been occasionally intercepted at U. S. ports of entry.

Distribution: Africa (Tanganyika, Sudan, Algeria, Angola, Belgian Congo, Egypt, French Equatorial Africa, Somaliland, Kenya, Nyasaland, Mozambique, Northern Rhodesia, Uganda), Cyprus, Brazil, Burma, Ceylon, India, Indochina, Iraq, Philippines.



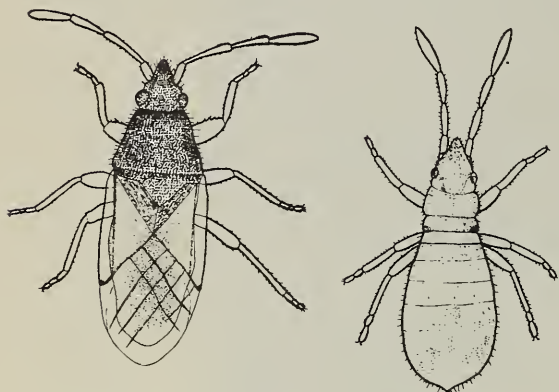
General Distribution of Oxycarenus hyalinipennis

Hosts: Cotton, abutilon, kenaf, okra, hollyhock, hibiscus and other Malvaceae. Also recorded on Brachychiton populneus.

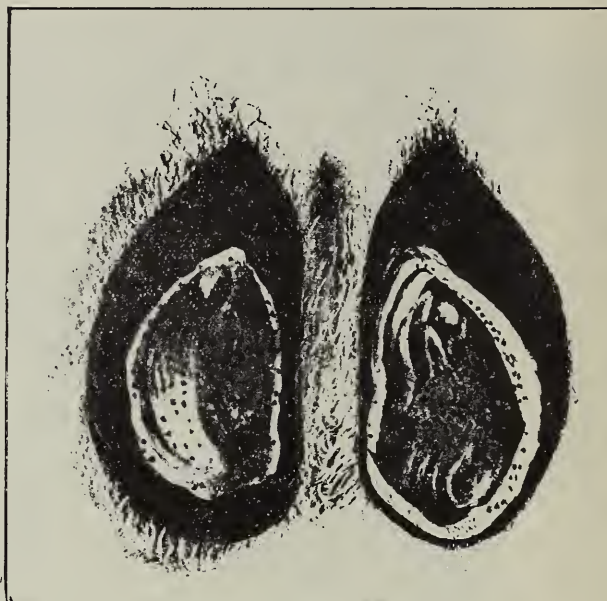
Life History and Habits: In Egypt copulation and oviposition commence when the first cotton bolls open. Eggs are laid usually in the lint, sometimes on green bolls. Each female lays about 20 eggs. Hatching occurs in about 4 days. All stages feed on the seed. The life cycle may be complete in 20 days. There are 3 to 4 generations annually. The insect hibernates in the adult stage in grass and weed or other such shelter. Although the overwintered adults appear in young cotton, breeding does not take place until the bolls are ripe. In heavy infestations, populations build up to enormous numbers. As many as 749 adults and nymphs have been recorded in a single boll.

(Lygaeidae, Hemiptera)

Description: Newly emerged ADULT pale pink but rapidly turns black. Length of male about 3.8 mm., female 4.3 mm. Male abdomen terminates in round lobe, while that of female is truncate. The insects have three tarsal joints and a pair of ocelli. Hemelytra are hyaline, clavus and base of cuneus and embolium denser than rest. Setae of 3 different types; more or less erect, stiff hairs, blunt at tip terminating in 4 to 7 small teeth; normal straight tapering hairs; and very thin curved flat-lying tapering hairs. Head and thorax of NYMPHS brownish-olivaceous, abdomen pinkish. Fourth instar darker brown on head and thorax, wing-buds distinct, overlapping sides of white metathorax. EGG oval 0.95 x 0.28 mm., striated, pale yellow becoming pink. (Prepared in Survey and Detection Operations in cooperation with other ARS agencies). CEIR 10(11):3-11-60.



Adult and Nymph of
Oxycarenus hyalinipennis



Severely Attacked Cotton Seed

Major reference and figures (except map): Kirkpatrick, T. W. 1923. Minist. Agr., Egypt. Tech. and Sci. Serv. Bul. 35, 107 pp.

INSECTS NOT KNOWN TO OCCUR IN THE UNITED STATES

LARCH THRIPS (Taeniothrips laricivorus Kratochvil and Farsky)

Economic Importance: This thrips was first recorded as the causal agent of die-back disease of larch in 1941 in Czechoslovakia. A toxin is injected in the process of feeding by the thrips. Extensive areas in central Europe are now affected by this pest. Ten to twenty-year-old stands of European larch grown beyond its natural range have been especially damaged by attacks of this species in large masses, particularly in areas under the influence of oceanic climate. Infestations appear in the spring as new shoots sprout. Adults prefer to live on new top shoots and the degree of damage caused depends much on climatic conditions. Especially when the second generation of the insect coincides with a long dry season, as frequently happens in July, the infested top shoots often die. The loss of height increment renders the young larch trees unable to compete with other tree species and tree tops usually become deformed through the growth of secondary shoots.

The spread of T. laricivorus from its native habitat in the larch stands of south central Europe to its present range of distribution appears to have been a combination of factors; first, of course, was the increased cultivation of larches and the second was the supporting climatic factors.

Hosts: European larch (Larix decidua) and Japanese larch (Larix leptolepis) are recorded hosts, with the latter species being more resistant.

Distribution: The range of this species extends from Denmark to northern Yugoslavia and north Italy, from Czechoslovakia across Austria to Switzerland, and from southeastern France (Saar region) across Germany and Poland into the USSR. Its actual range into the USSR is not known.



General Distribution of Taeniothrips laricivorus

Life History and Habits: The biology as studied in Germany is as follows: Overwintered females appear on larch about the last of April or first of May and gather on new shoots. Eggs are laid during the following days and weeks in young, tender needles of the terminal shoot. Each female will lay about 42 eggs. Development from egg to adult consists of 6 stages; egg, larva I, larva II, prepupa, pupa, and adult. The development of the separate stages is dependent on various factors, such as temperature, moisture, wind and

(Thysanoptera, Thripidae)

quality of food. The larvae of stages I and II and the adults of the first generation feed on the young shoot tips, with adults of this generation usually appearing about the last part of June. A second generation will often follow the first; but the development of this generation is considerably shorter, with adults emerging about the first of August. In elevations over 1,500 feet, however, only one generation a year is supposed to occur.

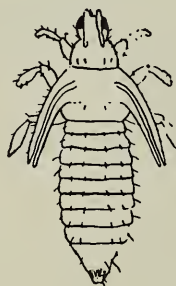
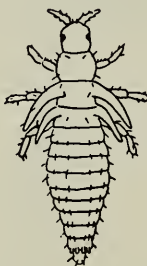
Description: ADULTS - Female averages 1.18 mm. in length, dark brown except for yellow (or light yellowish-brown) tip of second and entire third antennal segments, bases and apices of femora and tibiae, and entire tarsi. In gravid females, abdominal intersegmental membranes (or of the abdomen) appear as yellowish-brown transverse lines (stripes, bars, etc.). Male smaller, averages 0.85 in length; and lighter in color, orange-yellow except for dark apex of head and antennal segments beyond middle of third. EGG - Kidney-shaped and white, 0.330-0.350 mm. long and 0.155 mm. wide. LARVAE - Stage I has large head in relation to body and abdomen is sharply conical; color white. Stage II is yellowish, larger body than stage I and a sharper delimitation of antennal segments than in stage I. (Prepared in Survey and Detection Operations in cooperation with other ARS agencies). CEIR 10(25):6-17-60.



Adult Female



Adult Male



Larva I

Larva II

Prepupa

Pupa

Figures of Taeniothrips laricivorus

Major references: Nageli, W., 1944. Schweiz. Ztschr. f. Forstwesen 95(5/6):175-180. Schimitschek, E., 1955. FAO Plant Protect. Bul. 3(10):152-153. Vité, J. P., 1954. Anz. f. Schädlingkunde 27(11): 161-166. (Figures, except map, from Vité).

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